

Transportation Impact Assessment – Step 4: Analysis

## Riverside South Employment Lands and Blocks 13, 14

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Prepared for Riverside South Development Corporation  
by IBI Group  
August 2, 2022

# Document Control Page

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|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CLIENT:           | Riverside South Development Corporation                                                                                                                                                                                                                                                                                                                                                   |
| PROJECT NAME:     | Riverside South Employment Lands and Blocks 13, 14                                                                                                                                                                                                                                                                                                                                        |
| REPORT TITLE:     | Transportation Impact Assessment                                                                                                                                                                                                                                                                                                                                                          |
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| HISTORY:          | TIA Step 4 to Client for Submission to City – August 2, 2022                                                                                                                                                                                                                                                                                                                              |

## **TIA Plan Reports - Certification**

On 14 June 2017, the Council of the City of Ottawa adopted new Transportation Impact Assessment (TIA) Guidelines. In adopting the guidelines, Council established a requirement for those preparing and delivering transportation impact assessments and reports to sign a letter of certification.

Individuals submitting TIA reports will be responsible for all aspects of development-related transportation assessment and reporting, and undertaking such work, in accordance and compliance with the City of Ottawa's Official Plan, the Transportation Master Plan and the Transportation Impact Assessment (2017) Guidelines.

By submitting the attached TIA report (and any associate documents) and signing this document, the individual acknowledges that s/he meets the four criteria listed below:

### **CERTIFICATION**

1. I have reviewed and have a sound understanding of the objectives, needs and requirements of the City of Ottawa's Official Plan, Transportation Master Plan and the Transportation Impact Assessment (2017) Guidelines;
2. I have a sound knowledge of industry standard practice with respect to the preparation of transportation impact assessment reports, including multi modal level of service review;
3. I have substantial experience (more than 5 years) in undertaking and delivering transportation impact studies (analysis, reporting and geometric design) with strong background knowledge in transportation planning, engineering or traffic operations; and
4. I am either a licensed<sup>1</sup> or registered<sup>1</sup> professional in good standing, whose field of expertise [check ☒ appropriate field(s)] is either transportation engineering ☐ or transportation planning ☐.

<sup>1</sup> License or registration body that oversees the profession is required to have a code of conduct and ethics guidelines that will ensure appropriate conduct and representation for transportation planning and/or transportation engineering works.

Dated at Ottawa this 2<sup>nd</sup> day of August, 2022.  
(City)

Name: David Hook, P.Eng.

Professional Title: Project Engineer



Signature of Individual certifier that she/he meets the above four criteria

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## Executive Summary

IBI Group (IBI) was retained by the Riverside South Development Corporation (RSDC) to undertake a Transportation Impact Assessment (TIA) in support of a Draft Plan of Subdivision application for a proposed development located at 3700 Twin Falls Place in the community of Riverside South. The proposed development will consist of a mix of industrial, institutional (potential fire hall), and residential (townhouse) land uses. Access to the industrial portion (Blocks 1 to 11) of the site will be provided via a new signalized intersection on Limebank Road along the future realigned Leitrim Road. The residential portion (Block 14), which has been renamed to 4020 Spratt Road, will be accessed through a new private approach at the existing Spratt & Urbandale Plaza intersection. The lands designated as institutional/fire hall (Block 13) will be accessed via new private approaches on both Spratt Road and Limebank Road, although the specific configuration of these accesses will be established as part of Site Plan Control.

Based on the trip generation rates from the ITE Trip Generation Manual (11<sup>th</sup> Edition), it is anticipated that the industrial portion of the proposed development will generate between 936 to 1,008 two-way person-trips during the weekday morning and afternoon peak hours. Similarly, based on 2020 TRANS trip generation rates, the residential portion of the development will generate between 25 and 27 two-way person trips during the weekday morning and afternoon peak hours. Given the future capacity constraints along the Leitrim Screenline, the future transit mode share within the community is expected to be significantly higher than it is currently. Overall, the industrial portion of the site is anticipated to generate approximately 702 to 756 two-way vehicle-trips while the residential portion of the site is anticipated to generate between 11 to 12 two-way vehicle trips during the weekday morning and afternoon peak hours. The institutional lands (Block 13) are expected to generate only nominal amounts of trips during the weekday peak hours.

The segment of the realigned Leitrim Road within the proposed development will be constructed with a rural cross-section and will therefore lack both sidewalks and segregated bicycle facilities. As such, in order to ensure that employees retain access to transit, it is recommended that transit stops be provided at the following three locations on the realigned Leitrim Road: at Limebank Road, at Street #2 and the westmost intersection with Street #1. It is expected that internal pedestrian facilities will be provided to connect the various future industrial/employment buildings to these transit stops.

The results of the intersection capacity analysis indicated that the study area intersections are presently operating at an acceptable Level of Service during the weekday morning and afternoon peak hours under Existing and will continue to do so under Future (2031) Background Traffic conditions. Under Future (2031) Total Traffic conditions, however, the Limebank & Leitrim and Limebank & Realigned Leitrim intersections are expected to begin approaching their theoretical capacity. It is recommended that the three intersections along Limebank Road within the study area be coordinated to ensure a smooth progression of traffic along the corridor. It is also recommended that the design of the future Limebank & Realigned Leitrim intersection be modified to include dual eastbound left-turn lanes, a northbound left-turn lane with at least 105m of storage, an eastbound right-turn lane with at least 50m of storage and a southbound right-turn lane with at least 35m of storage.

Additionally, an eastbound auxiliary left-turn lane with a minimum of 15m of storage is recommended at the Spratt & Urbandale Plaza intersection.

Multi-Modal Level of Service (MMLOS) analysis was completed for all signalized study area intersections and the three roadway segments adjacent to the proposed development. It is important to note that Level of Service for cyclists and pedestrians is largely dictated by the size

of an intersection and therefore mitigation measures are often limited in these circumstances. The proposed measures are recommended in order to address existing deficiencies and not as a direct consequence of the proposed development. The results of the analysis indicate that the City should consider implementing the following measures:

- Consider implementing leading pedestrian intervals (LPIs) and high-visibility crosswalk markings at all signalized intersections in the study area, as warranted by pedestrian volumes; and
- In the future, when the study area intersections and roadways require reconstruction, consider implementing a protected intersection design and providing cycle tracks.

**Based on the findings of this study, it is the overall opinion of IBI Group that the proposed development will integrate well with and can be safely accommodated by the adjacent transportation network.**

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# 1 Introduction

IBI Group (IBI) was retained by the Riverside South Development Corporation (RSDC) to undertake a Transportation Impact Assessment (TIA) in support of a Draft Plan of Subdivision application for a proposed subdivision located at 3700 Twin Falls Place in Ottawa, occupying the majority of the undeveloped lands west of Limebank Road between Leitrim Road and Spratt Road. The lands north of Mosquito Creek will be designated as an industrial/employment subdivision, while the lands to the south will be designated a residential subdivision (Block 14, now referred to as 4020 Spratt Road) and a future Institutional land use or Fire Hall (Block 13).

In accordance with the City of Ottawa's Transportation Impact Assessment Guidelines, published in June 2017, the following report is divided into four major components:

- **Screening** – Prior to the commencement of a TIA, an initial assessment of the proposed development is undertaken to establish the need for a comprehensive review of the site based on three triggers: Trip Generation, Location and Safety.
- **Scoping** – This component of the TIA report describes both the existing and planned conditions in the vicinity of the development and defines study parameters such as the study area, analysis periods and analysis years of the development. It also provides an opportunity to identify any scope exemptions that would eliminate elements of scope described in the TIA Guidelines but not relevant to the development proposal, based on consultation with City staff.
- **Forecasting** – The Forecasting component of the TIA is intended to review both the development-generated travel demand and the background network travel demand. It also provides an opportunity to rationalize this demand to ensure projections are within the capacity constraints of the transportation network.
- **Analysis** – This component documents the results of any analyses undertaken to ensure that the transportation related features of the proposed development are in conformance with prescribed technical standards and that its impacts on the transportation network are both sustainable and effectively managed. It also identifies a development strategy to ensure that what is being proposed is aligned with the City of Ottawa's policies and city-building objectives.

Throughout the development of a TIA report, each of the four study components above are submitted in draft form to the City of Ottawa and undergo a review by a designated Transportation Project Manager. Any comments received are addressed to the satisfaction of the City's Transportation Project Manager before proceeding with subsequent components of the study. All technical comments and responses are included in **Appendix A**.

Given that access to the proposed development will be dependent on a new signalized intersection, Functional Design Drawings of recommended roadway improvements to support a Roadway Modification Application (RMA) may be required, however as this intersection has been identified in the recently-approved Environmental Assessment with no implementation timing or funding mechanism, RMA materials will not accompany this TIA and will be subject to future discussions with City staff. The submission may, however, require a post-development Monitoring Plan to track performance of the planned TIA Strategy. The need for the latter element will be confirmed through the analysis undertaken for this report.

## 2 TIA Screening

An initial screening was completed to confirm the need for a Transportation Impact Assessment by reviewing the following three triggers:

- **Trip Generation:** Based on the proposed size of the employment subdivision, the minimum development size threshold has been exceeded and therefore the Trip Generation trigger is satisfied.
- **Location:** The employment portion of the proposed development will be accessed from a new signalized access on Limebank Road which is designated as a spine cycling route. As such, the Location trigger is satisfied.
- **Safety:** Boundary street conditions were reviewed to determine if there is an elevated potential for safety concerns adjacent the site. Given the high posted speeds on Limebank Road and the documented history of traffic operations and safety concerns the Safety trigger is satisfied.

As the proposed development meets the Trip Generation, Location and Safety triggers, the need to undertake a Transportation Impact Assessment is confirmed.

A copy of the Screening Form is provided in **Appendix B**.

## 3 Project Scoping

### 3.1 Description of Proposed Development

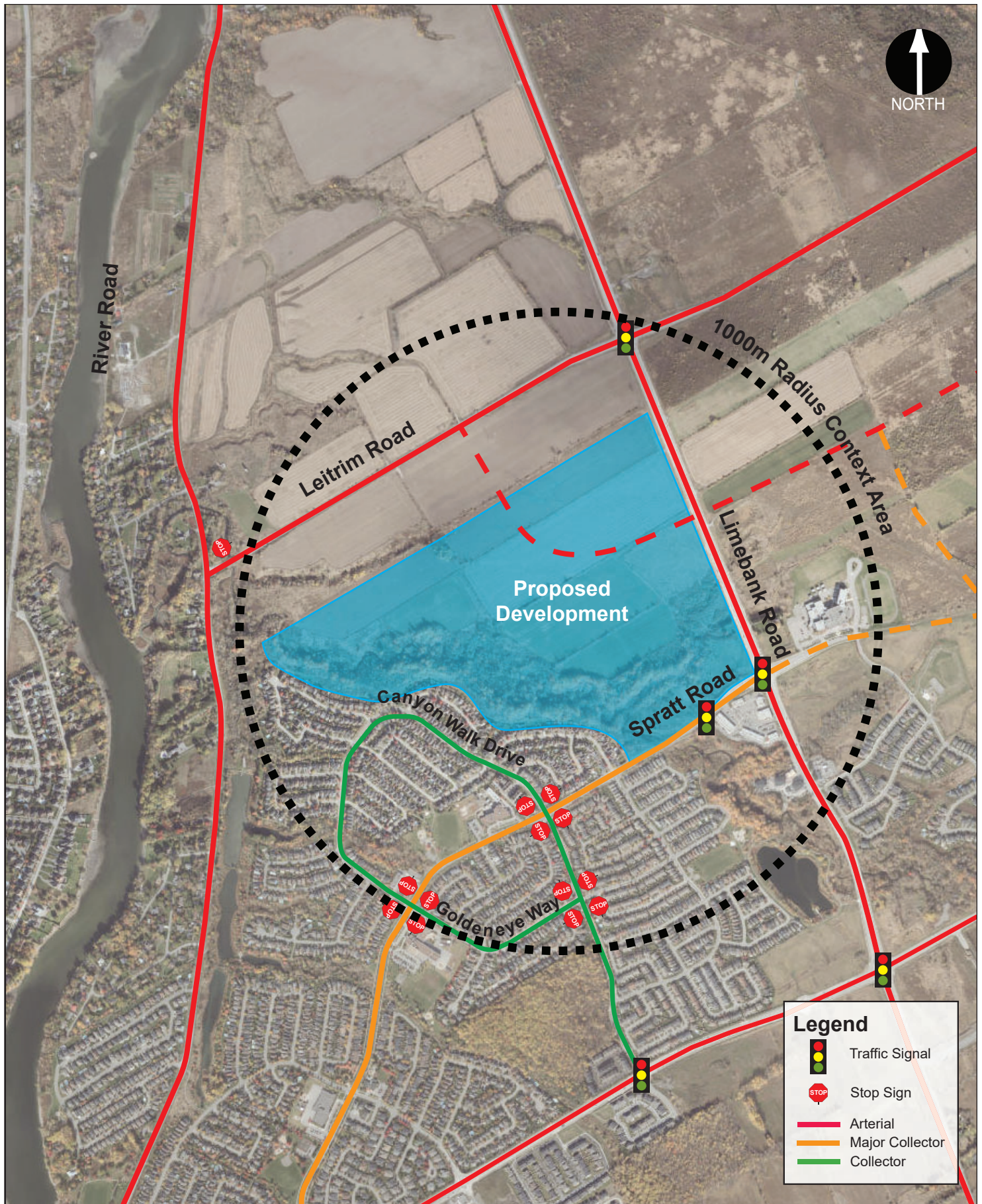
#### 3.1.1 Site Location

The proposed development is located at 3700 Twin Falls Place in the Riverside South community. The site is located within the boundaries of the Riverside South Community Design Plan (CDP) and subject to the policies of the Secondary Plan. The proposed development is located west of Limebank Road and is bound by undeveloped land to the north, Limebank Road to the east, Spratt Road to the south, and an existing low-rise residential subdivision to the west.

The property is physically divided by Mosquito Creek. The lands to the north of this natural feature will have direct access to Limebank Road, while the lands to the south will be accessed from Spratt Road. An Environmental Assessment Study was recently completed by the City of the Ottawa indicating that the preferred alignment for a future arterial road would pass through the northern portion of the property, slated for employment use.

According to the Official Plan (Schedule B3), the full extents of the development, including the residential and institutional blocks, are entirely located within the Ottawa International Airport Economic District. More specifically, the lands north of Mosquito Creek are within the Airport Operating Influence Zone.

The site location and its surrounding context is illustrated in **Exhibit 1**.



### Legend

-  Traffic Signal
-  Stop Sign
-  Arterial
-  Major Collector
-  Collector



Riverside South Employment Lands  
& Blocks 13,14  
Transportation Impact Assessment

Exhibit 1:  
Site Location

PROJECT No. 136974

SCALE: 0m 200m 400m

### 3.1.2 Land Use Details

**Table 1** below summarizes the proposed land uses included in this development. The anticipated number of employees within the industrial park and institutional block are based on the employee density targets from the draft Riverside South Secondary Plan (i.e. 50 employees per hectare and 20 employees per fire hall). It is important to note that this employment density target from the Draft Secondary Plan is preliminary and is still under review.

Table 1 - Land Use Statistics

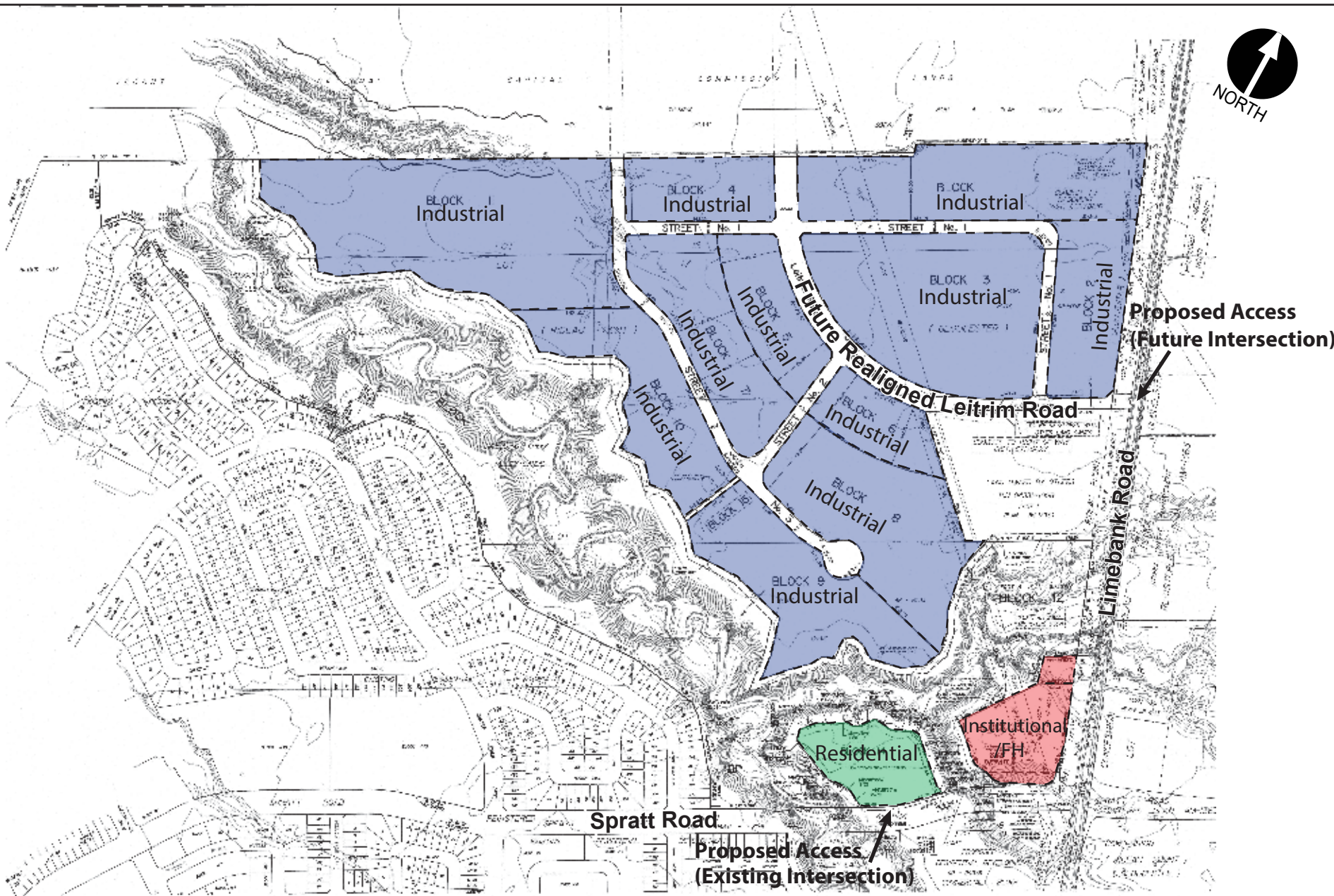
| BLOCK   | LAND USE                | AREA<br>(HECTARES) | EMPLOYEES/<br>UNITS |
|---------|-------------------------|--------------------|---------------------|
| 1 to 11 | Industrial Park         | 42.257             | 2,113 employees     |
| 12      | Mosquito Creek          | 32.379             | N/A                 |
| 13      | Institutional/Fire Hall | 1.597              | 20 employees        |
| 14      | Townhomes               | 1.646              | 38 units            |
| 15      | Multi-Use Path          | 0.056              | N/A                 |

The Draft Plan of Subdivision for the proposed development is illustrated in **Exhibit 2**. A segment of the future realigned Leitrim Road will pass through the proposed development and intersect with Limebank Road at a new signalized intersection which will provide access to the industrial park portion of the proposed development (Blocks 1 to 11). The residential portion of the proposed development (Block 14) will be physically separated from the employment lands by Mosquito Creek and will be accessed via a new approach to the existing signalized Spratt & Urbandale Plaza intersection. It is anticipated that Block 13 will be accessed via private approaches on both Limebank Road and Spratt Road, although the specific access configuration for the block is expected to be established at the Site Plan Control application stage. The potential access locations for Block 13 will be reviewed in the Analysis section of this report.

The subject site is currently an undeveloped greenfield site and, according to GeoOttawa, is zoned DR – Development Reserve Zone.

### 3.1.3 Development Phasing & Date of Occupancy

The development of the site will progress over an extended timeframe as blocks are sold to various developers and built. As such, the exact timing for full buildout of the site is unknown, however, for the purposes of this study it is assumed that full buildout will occur in 2031, the planning horizon year of the 2013 Transportation Master Plan. This is a conservative assumption as these types of developments tend to build out over even longer timeframes. The development of each Block will be subject to individual Site Plan Control Applications.



## 3.2 Existing Conditions

### 3.2.1 Existing Road Network

#### 3.2.1.1 Roadways

**Table 2** below summarizes the details of the boundary roadways as well as other streets within the context area of the proposed development.

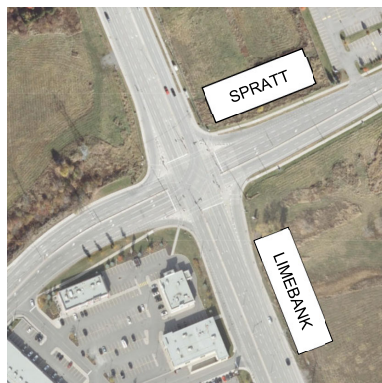
Table 2 - Existing Roadways

| NAME          | CLASS           | JURISDICTION   | ORIENTATION & EXTENTS                                  | CROSS-SECTION            | ROW (m) | SPEED LIMIT (km/h) |
|---------------|-----------------|----------------|--------------------------------------------------------|--------------------------|---------|--------------------|
| Limebank Road | Arterial        | City of Ottawa | North-South, River Road to Mitch Owens Road            | 4-Lane, Urban, Divided   | 44.5    | 80                 |
| Spratt Road   | Major Collector | City of Ottawa | East of Limebank Road to Mitch Owens Road in the south | 4-Lane, Urban, Undivided | 26-34   | 60                 |
| Leitrim Road  | Arterial        | City of Ottawa | East-West, River Road to east of Russel Road           | 2-Lane, Rural Undivided  | 37.5    | 80                 |

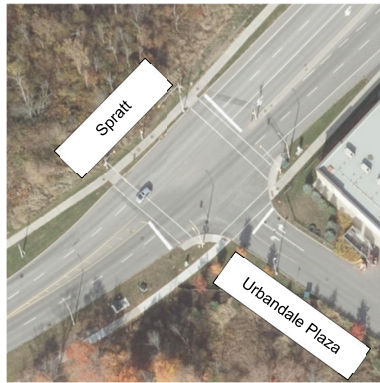
Source: Table 1 – Road Right-of-Way Protection, Official Plan (2021)

#### 3.2.1.2 Intersections

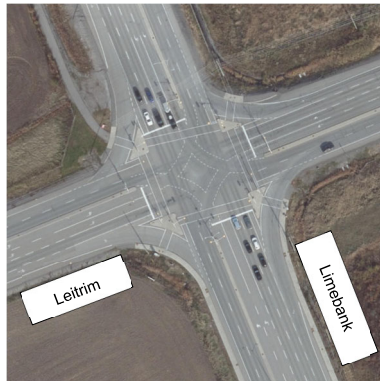
The following existing intersections have the greatest potential to be impacted by the proposed development:



- **Limebank Road & Spratt Road** is a four-legged signalized intersection with dual left-turn lanes, right-turn channels and bike lanes on all approaches. Based on the Draft Riverside South CDP, the intersection is designated as a Sub-Community Gateway.



- **Spratt Road & Urbandale Plaza** is a three-legged signalized intersection with left-turn lanes on the westbound and northbound approaches. Bike lanes have also been provided on both sides of Spratt Road east of the intersection. One of the proposed site access driveways will form the north leg of this intersection.



- **Leitrim Road & Limebank Road** is a four-legged signalized intersection with dual left-turn lanes, right-turn channels and bike lanes on all approaches. Based on the Draft Riverside South CDP, the intersection is designated as a Community Gateway.

#### **3.2.1.3 Driveways Adjacent to Development Access**

Within 200m of the proposed site access driveway on Spratt Road is a right-in/right-out access to the Urbandale Plaza (approximately 70m to the east).

#### **3.2.1.4 Traffic Management Measures**

There are currently no traffic management measures along any of the roadways within the 1km context area.

### **3.2.2 Existing Bicycle and Pedestrian Facilities**

The following cycling and pedestrian facilities exist within the context area:

- Concrete sidewalks on both sides of Limebank Road and Spratt Road
- On-street bike lanes on both sides of Limebank Road and Spratt Road (east of the Spratt Road & Urbandale Plaza signalized intersection).

### 3.2.3 Existing Transit Facilities and Service

OC Transpo operates the following transit routes within close proximity to the proposed development:

Table 3 - Existing Transit Routes

| ROUTE | ROUTE TYPE                | TERMINUSES                                     | PEAK PERIOD FREQUENCY                                                        |
|-------|---------------------------|------------------------------------------------|------------------------------------------------------------------------------|
| #99   | Regular, all-day          | Citigate/Barrhaven Centre to Hurdman/Greenboro | 30 minutes                                                                   |
| #299  | Weekday, peak period only | Manotick to Hurdman                            | Two trips in morning and two return trips in the evening, 60-minute headways |
| #680  | Weekday, peak period only | Merivale HS to Spratt/North Bluff              | Two trips in morning and two return trips in the evening                     |

The nearest bus stops to the industrial park portion of the proposed development are presently located approximately 100m south of the Limebank & Leitrim intersection, providing access to Routes #99 and #299. The nearest bus stops to the residential portion of the proposed development are located between 75m and 150m west of the Limebank & Spratt intersection, and also provide access to Routes #99 and #299. Route #680 can be accessed via a bus stop at the Spratt & Owls Cabin / North Bluff intersection, 300m west of the proposed access on Spratt Road. The transit service maps for the above routes are provided in **Appendix C**.

### 3.2.4 Collision History

A review of historical collision data has been conducted for the road network surrounding the proposed development. The TIA Guidelines require a safety review if at least six collisions for any one movement or of a discernible pattern, over a five-year period have occurred. **Table 4** summarizes all reported collisions between January 1, 2016 and December 31, 2020.

Table 4 – Reported Collisions within Vicinity of Proposed Development

| LOCATION                                    | # OF REPORTED COLLISIONS |
|---------------------------------------------|--------------------------|
| <b>INTERSECTIONS</b>                        |                          |
| Limebank & Spratt                           | 12                       |
| Limebank & Leitrim                          | 0                        |
| Spratt & Urbandale Plaza                    | 0                        |
| <b>SEGMENTS</b>                             |                          |
| Spratt – Limebank Road to Owls Cabin Avenue | 1                        |
| Limebank – Leitrim to Spratt                | 7                        |

Based on the collision history noted above, the Limebank & Spratt intersection and the segment of Limebank Road between Leitrim Road and Spratt Road may require further review.

Another method of evaluating the relative magnitude of collision frequency at one intersection compared to another is to quantify the average historical number of collisions against the daily volume of traffic entering the intersection. This is commonly expressed in terms of average collisions per year per Million Vehicles Entering (MVE) and a rate of greater than 1.0 is considered significant.

- Limebank & Spratt: 0.30 collisions per MVE
- Limebank & Leitrim: 0.00 collisions per MVE
- Spratt & Urbandale Plaza: 0.00 collisions per MVE

As indicated above, none of the context area intersections have experienced more than 1.0 collisions per MVE.

Detailed collision records are provided in **Appendix D**.

### 3.3 Planned Conditions

#### 3.3.1 Transportation Network

##### 3.3.1.1 *Future Road Network Projects*

The 2013 Transportation Master Plan (TMP) outlines future road network modifications required in the 2031 'Affordable Network'. The following projects were noted that may have an impact on traffic within the vicinity of the site:

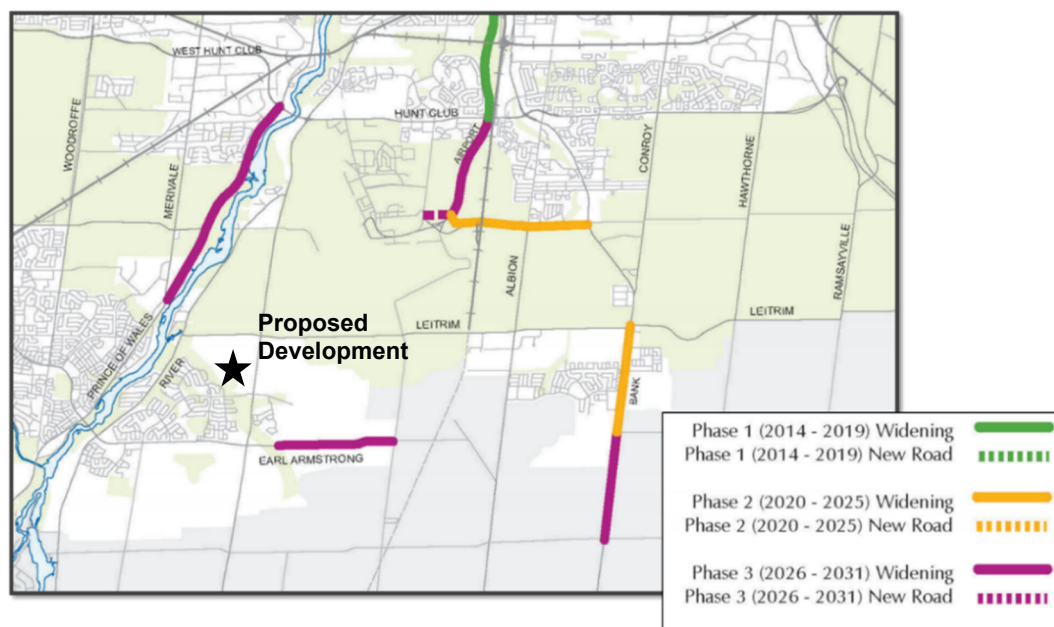
- **Earl Armstrong Road** – Planned widening from two to four lanes between Limebank Road and Bowesville Road (Phase 3: 2026-2031).

The TMP 2031 'Network Concept' also notes the following projects which are not expected to be implemented within the timeframe of this study but may have an impact on traffic within the vicinity of the site:

- **Leitrim Road Widening and Realignment** – Planned widening from two to four lanes from River Road to east of Limebank Road, and planned realignment and four-lane widening from east of Limebank Road to east of Albion Road.

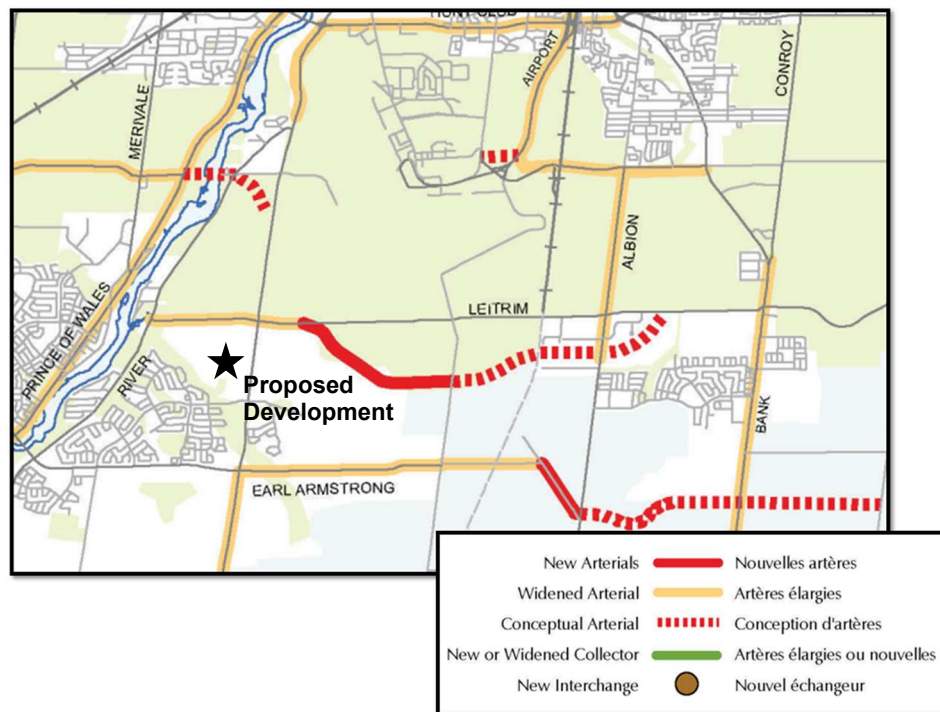
**Figure 1** and **Figure 2** below illustrates the planned changes to the arterial road network projects in the broader area, as per the TMP 2031 'Affordable Network' and 2031 'Network Concept', respectively.

Figure 1 - Future Road Network Projects: 2031 'Affordable Network'



Source: 2013 Transportation Master Plan – Map 11 '2031 Affordable Concept'

Figure 2 - Future Road Network Projects: 2031 'Network Concept'



Source: 2013 Transportation Master Plan – Map 10 '2031 Network Concept'

### Development Charges Background Study

The Development Charges (DC) Amendment Background Study (March 2019), published well after the 2013 TMP, indicates the following refined timelines or additional transportation network projects expected within the context area:

- **Earl Armstrong Road:** Widening is now planned for implementation between 2030 and 2031, according to the DC study.
- **Limebank Road:** The DC study indicates that this road will be widened between Earl Armstrong Road and Rideau Road in 2032.

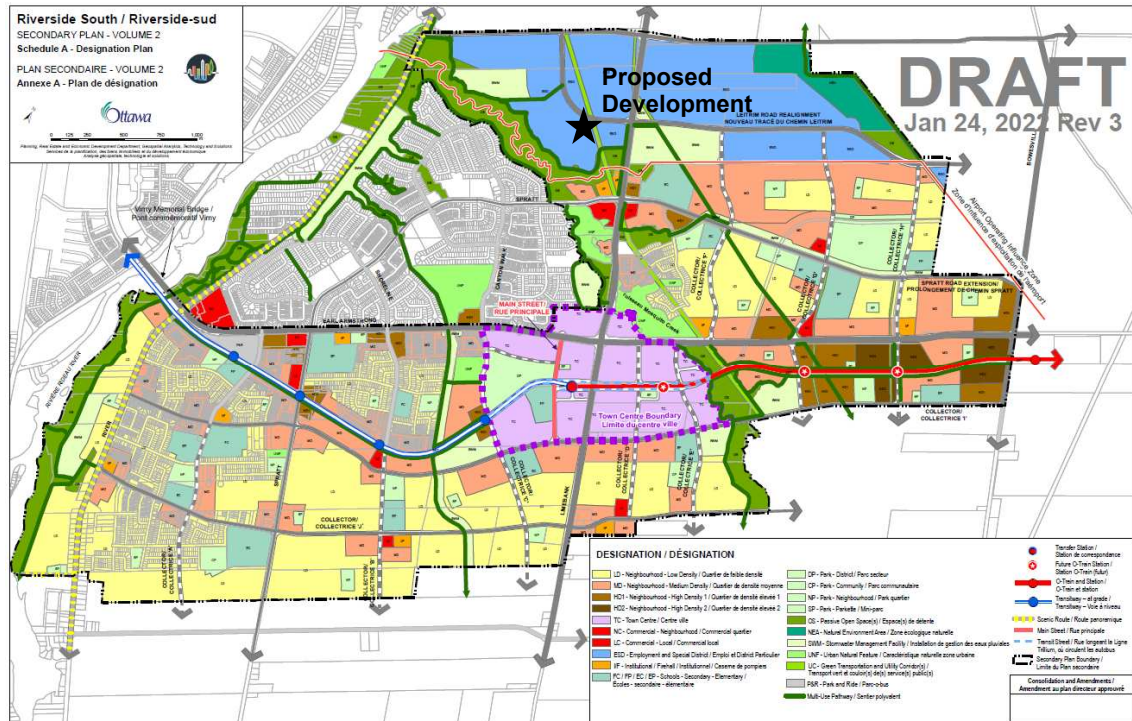
### Riverside South CDP

The Riverside South Community Design Plan (CDP) (June 2016) identifies the planned roadway network within the Riverside South community. The CDP is currently undergoing an update which is projected to be finalized in 2022. The latest draft plans indicate that:

- Spratt Road will be extended to Bowesville Road; and
- Leitrim Road will eventually be realigned and extend south from the current alignment of Leitrim Road, through the proposed development and continue east of Limebank Road.

**Figure 3** illustrates the latest draft plan from the CDP update. It is important to note that the land use plan illustrated below is still in draft form and undergoing alterations. As it applies to this study, the Stormwater Management (SWM) pond shown within the proposed development site has since been removed per the recommendations of the Master Servicing Study and replaced with additional employment land, as shown on the Draft Plan of Subdivision.

Figure 3 - Riverside South Community Design Plan Update - Draft Plan



Source: Draft Riverside South CDP – Land Use Plan, Revision 3

The construction timing for the above roadways is unknown at the moment, however, it is expected that these roadways will be extended/built as development progresses in the area.

### Leitrim Road ESR

The Leitrim Road Realignment and Widening Planning and Environmental Assessment Study – Environmental Study Report (ESR) (Parsons, August 2018) identifies the planned future roadway alignment and cross-section of Leitrim Road from approximately 575m west of Limebank Road to Kelly Farm Drive. This ESR was initiated as it relates to the long-term redevelopment plans of the Ottawa Macdonald-Cartier International Airport to include a new southern runway located along the existing alignment of Leitrim Road.

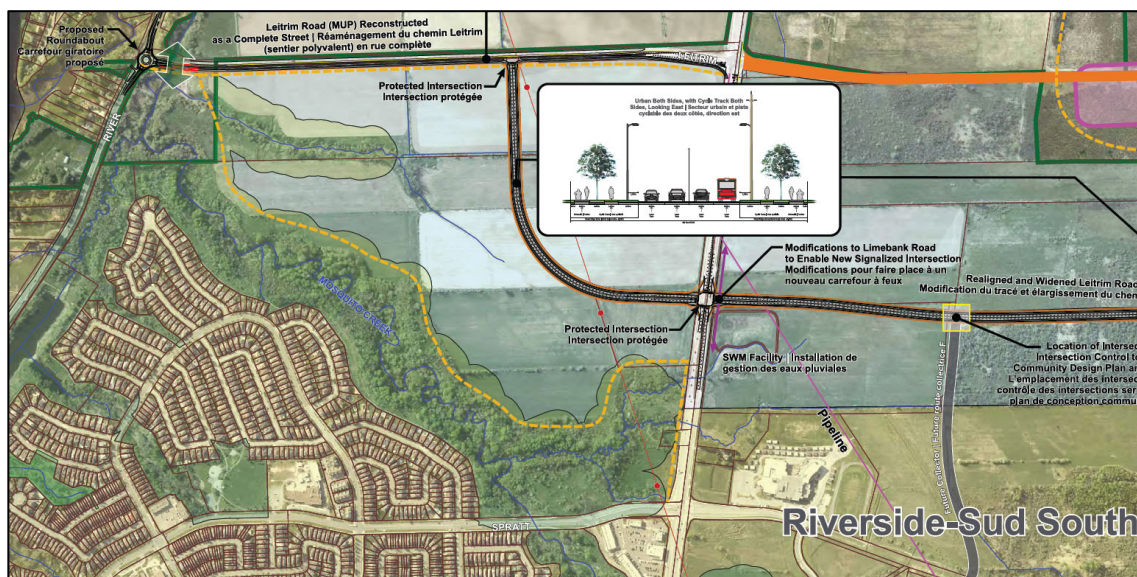
Based on the functional design plan developed as part of the ESR, within the context area the realigned Leitrim Road may ultimately have a four-lane urban undivided cross-section with 3.0m wide boulevards, 1.8m wide cycle tracks and 2.0m wide sidewalks on both sides of the road.

It should be noted, however, that in the interim, the segment of the future realigned Leitrim Road within the proposed development will have a rural cross-section with no sidewalks or cycle tracks. The future urbanization of this roadway is contingent on the availability of Stormwater Management (SWM) pond, in which there is presently none planned within the subject lands.

The ESR indicates that the realignment and widening of Leitrim Road is planned for beyond 2031 while the Airport Master Plan indicates it may be required in the 2040s.

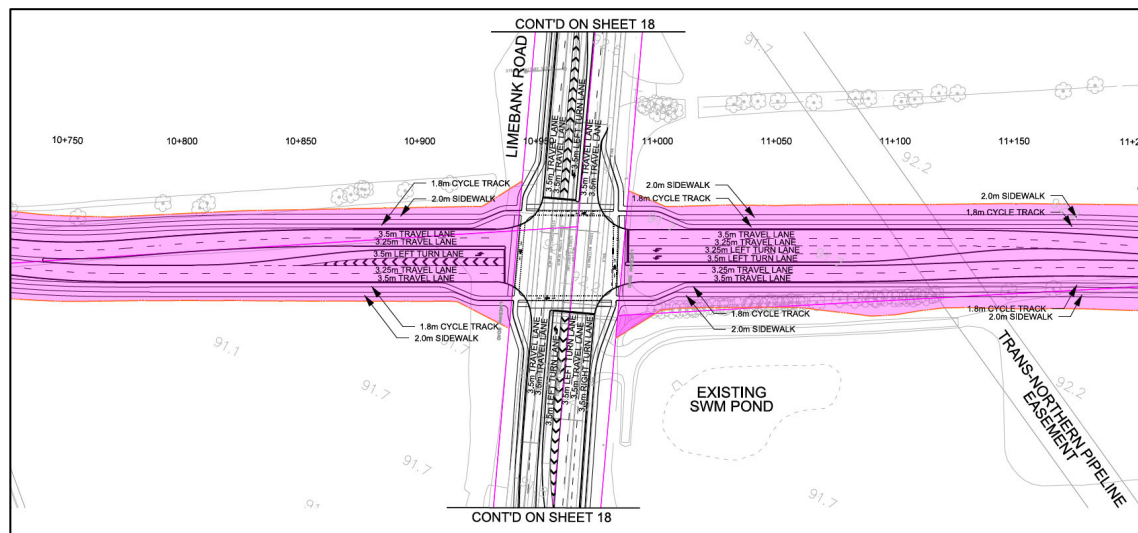
**Figure 4** and **Figure 5** show the planned realignment of Leitrim Road as well as the configuration of the new intersection where the realigned Leitrim Road meets Limebank Road.

Figure 4 - Planned Realignment of Leitrim Road



Source: Leitrim Road Realignment and Widening Planning and Environmental Assessment Study – Environmental Study Report (Parsons, August 2018)

Figure 5 - Planned Limebank Road & Realigned Leitrim Road Intersection Configuration



Source: Leitrim Road Realignment and Widening Planning and Environmental Assessment Study – Environmental Study Report (Parsons, August 2018)

### 3.3.1.2 Future Transit Facilities and Services

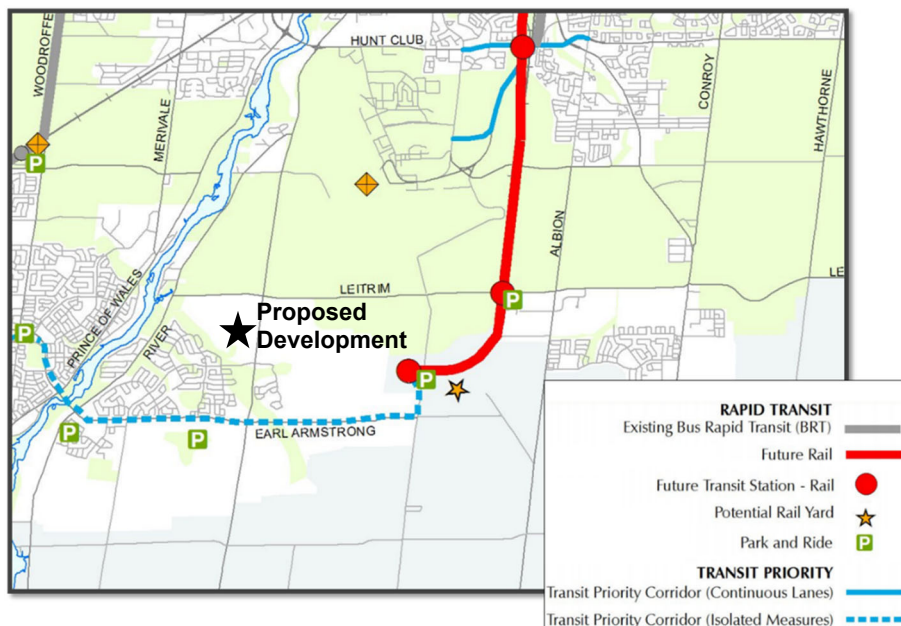
The 2013 TMP outlines the future rapid transit and transit priority (RTTP) network. The following projects were noted in the 'Affordable RTTP Network' that may have a future impact on study area traffic:

- **Trillium Line Extension** – Extension of the Trillium Line from its current terminus at Greenboro Station to Bowesville Station. The *Trillium Line Extension Planning and Environmental Assessment (EA) Study (January 2016)* and the *Trillium Line Light Rail Transit Extension Addendum (September 2018)* both expand upon the TMP. The Trillium Line will now extend to Limebank Road with a spur line to the Ottawa International Airport. Based on the official City of Ottawa Stage 2 LRT website, the Trillium Line South Extension is expected to begin revenue service by the end of 2022.
- **Chapman Mills/ Strandherd Drive/ Earl Armstrong Road Transit Priority Corridor** - The corridor is expected to be upgraded with transit signal priority and queue jump lanes between the Barrhaven Town Centre Station and Bowesville Station. There is presently no specific timing available for the implementation of this project.

**Figure 6** below shows the transit infrastructure projects in the vicinity of the proposed development that are part of the 2031 Affordable Network. The proposed Trillium Line South Extension, including the recommendations from the EA study and the Addendum, are illustrated in below **Figure 7**.

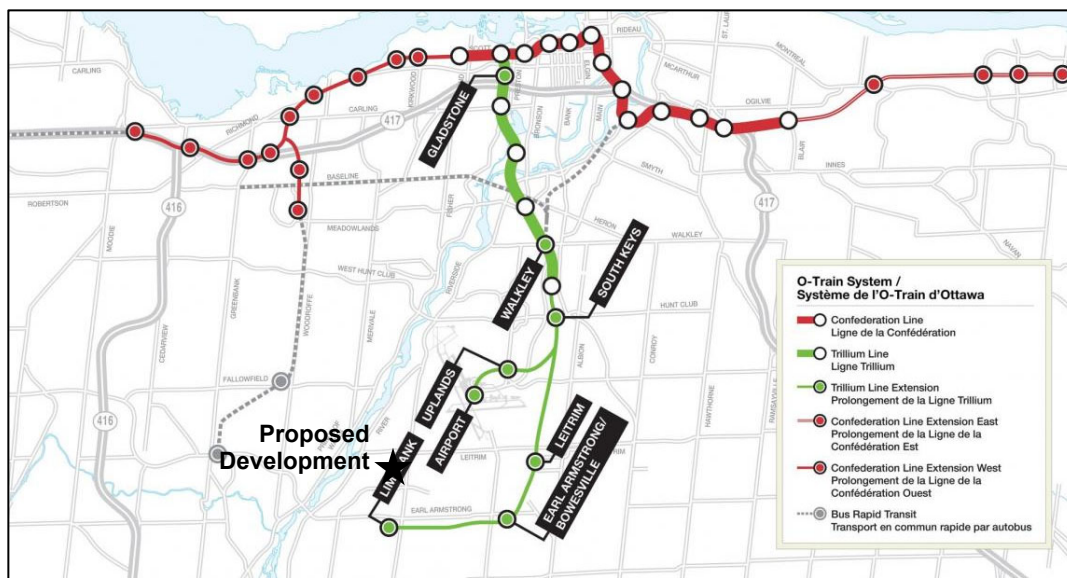
As shown previously in **Figure 3**, the Riverside South CDP identifies the eventual construction of a BRT corridor extending west from the terminus of the Trillium Line Extension, connecting the Riverside Park and Ride with the future O-Train terminus at Limebank Road. The implementation of this corridor, however, is presently not expected to occur within the City's 2031 planning horizon.

Figure 6 - Future 'Affordable RTP Network Projects'



Source: 2013 Transportation Master Plan – Map 5 '2031 Affordable Network'

Figure 7 - Stage 2 LRT - Trillium Line Extension



Source: City of Ottawa Stage 2 LRT Project Website – Trillium Line South Extension

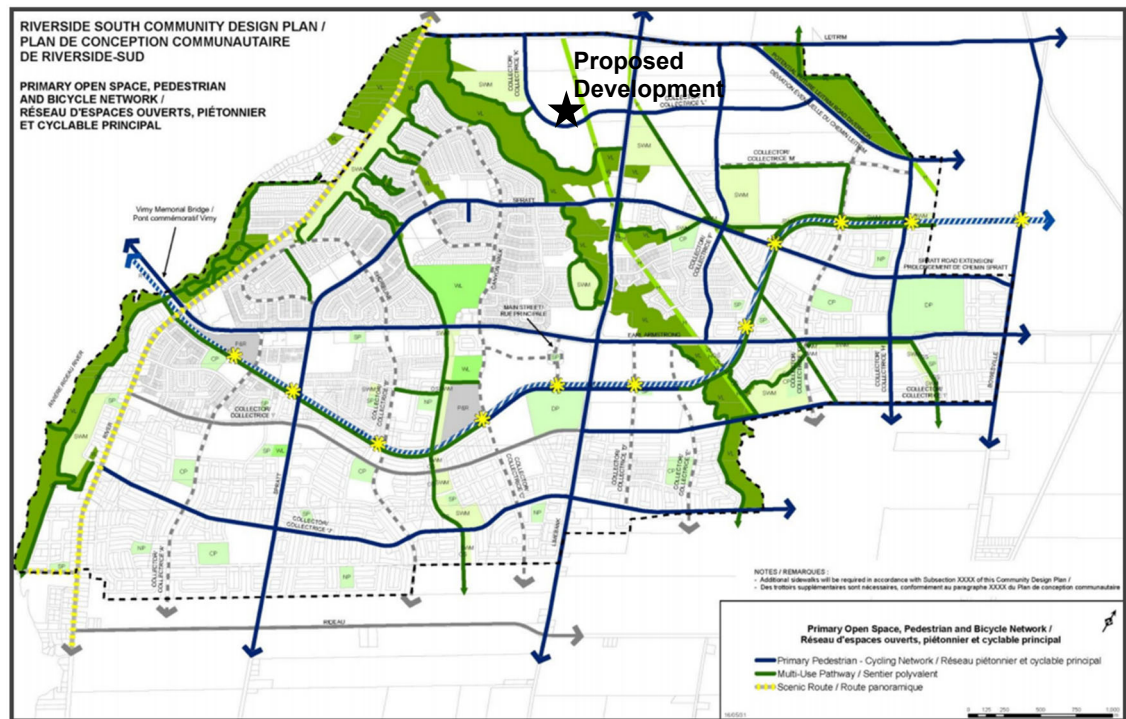
### 3.3.1.3 Future Cycling and Pedestrian Facilities

The Transportation Master Plan (TMP) designates Limebank Road and Leirrim Road as 'Spine' or City-wide Cycling Routes, which forms part of a system linking the commercial, employment, institutional, residential and educational nodes throughout the City of Ottawa. Spratt Road is identified as a 'Local Route' in the Ultimate Cycling Network.

The Riverside South CDP provides guidance on future active transportation facilities within the area and describes Limebank Road, Leitrim Road, the realigned Leitrim Road, and Spratt Road as being part of the 'Primary Pedestrian – Cycling Network'.

The planned cycling and pedestrian network indicated in the CDP is shown in **Figure 8** below.

Figure 8 - Riverside South Community Design Plan - Cycling and Pedestrian Network

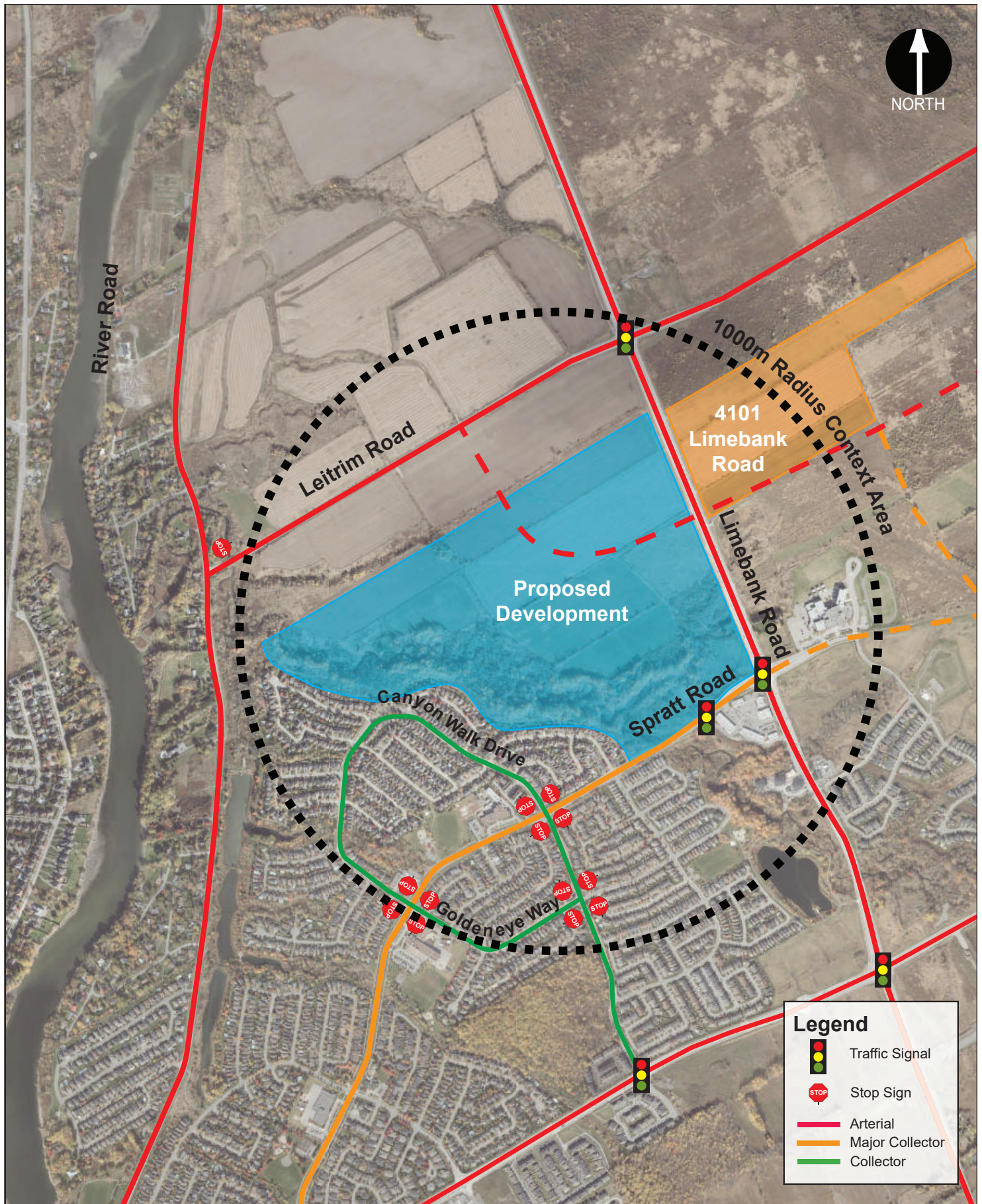


Source: Riverside South Community Design Plan

### 3.3.2 Future Adjacent Developments

The City of Ottawa Transportation Impact Assessment (TIA) Guidelines specify that all significant developments proposed within the surrounding area which are likely to occur within the study's horizon year must be identified and taken into consideration in the development of future background traffic projections.

There are currently no active development applications of significance within the context area of the proposed development. However, for the purposes of identifying future intersection requirements, an assumption of the potential development magnitude for the adjacent 4101 Limebank Road property has been made and trip generation estimates for the site based on the land uses described in the Riverside South CDP have been developed. The location of this potential future development is illustrated in **Exhibit 3** below.



### 3.4 Study Area

With consideration of the information presented thus far, a study area bound by Leitrim Road to the north, Spratt Road to the south, Limebank Road to the east and the western boundary of the site will provide a sufficient assessment of the development's impact on the adjacent transportation network.

The following intersections have been identified as being most impacted by the proposed development and will be assessed for vehicular capacity as part of this study:

- Limebank & Spratt
- Limebank & Leitrim
- Limebank & Realigned Leitrim (future)
- Spratt & Urbandale Plaza

Intersection-based Multi-Modal Level of Service (MMLOS) analysis will be conducted for any existing or future signalized study area intersections listed above. Stop-controlled intersections and roundabouts are exempt from this analysis, as no methodology currently exists for evaluating MMLOS with these configurations. Segment-based MMLOS analysis will be conducted for the segments of Limebank Road and Spratt Road that are adjacent to the proposed development as well as the segment of realigned Leitrim Road that traverses the site.

### 3.5 Time Periods

As the proposed development will consist of industrial and residential land uses, traffic generated during the weekday morning and weekday afternoon peak hours are expected to result in the most significant impact to traffic operations on the adjacent network.

### 3.6 Existing Lane Configurations & Traffic Volumes

The following weekday morning and afternoon peak hour turning movement counts were obtained from the City of Ottawa:

- Limebank Road & Leitrim Road (City of Ottawa, February 2022)
- Limebank Road & Spratt Road (City of Ottawa, December 2019)
- Spratt Road & Urbandale Plaza (City of Ottawa, November 2018)

In general, the City requires the use of traffic counts conducted within the last 3 years. The count at the Spratt & Urbandale Plaza intersection was conducted over 3 years ago therefore the eastbound and westbound through volumes were balanced with the adjacent Limebank & Spratt intersection in order to account for changes in traffic patterns that may have occurred since the count was conducted. As there have been no significant changes to the Urbandale Plaza shopping centre since 2018, it is expected that turning volumes at the intersection have not changed significantly.

A growth rate was applied to the northbound and southbound through movements of the Limebank & Spratt intersection to approximate existing traffic volumes. Justification of the background growth rates is discussed further in the Forecasting section of this report.

The 2022 count at the Limebank & Leitrim intersection was conducted during the COVID-19 pandemic and therefore required adjustment to ensure it is representative of typical traffic conditions. The *COVID-19 Traffic Volume Monitoring at Intersections* data provided by the City of Ottawa through Open Ottawa suggests that weekday morning peak hour volumes at the intersection may have been approximately 14% lower than typical traffic conditions. The weekday

morning peak hour traffic volumes were therefore increased in order to account for the impact of the pandemic, and volumes at the intersection during both peak hours were subsequently balanced with the adjacent Limebank & Spratt intersection.

Peak hour traffic volumes representative of typical conditions are shown in **Exhibit 4**. The traffic count data is provided in **Appendix E**. The lane configurations and intersection controls for the study area intersections are illustrated in **Exhibit 5**.

### 3.7 Analysis Years

The following analysis years will be assessed in this study:

- Existing (2022) Traffic
- Future (2031) Background Traffic
- Future (2031) Total Traffic – Full buildout

Typically, traffic conditions are also evaluated 5 years beyond full buildout of the development, however, as 2031 represents the horizon year of the Transportation Master Plan it is not possible to accurately estimate traffic conditions beyond 2031.

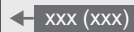
## Legend



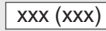
Traffic Signal

xxx (xxx)

Weekday AM (PM)  
Peak Hour Volume



Pedestrian Volume



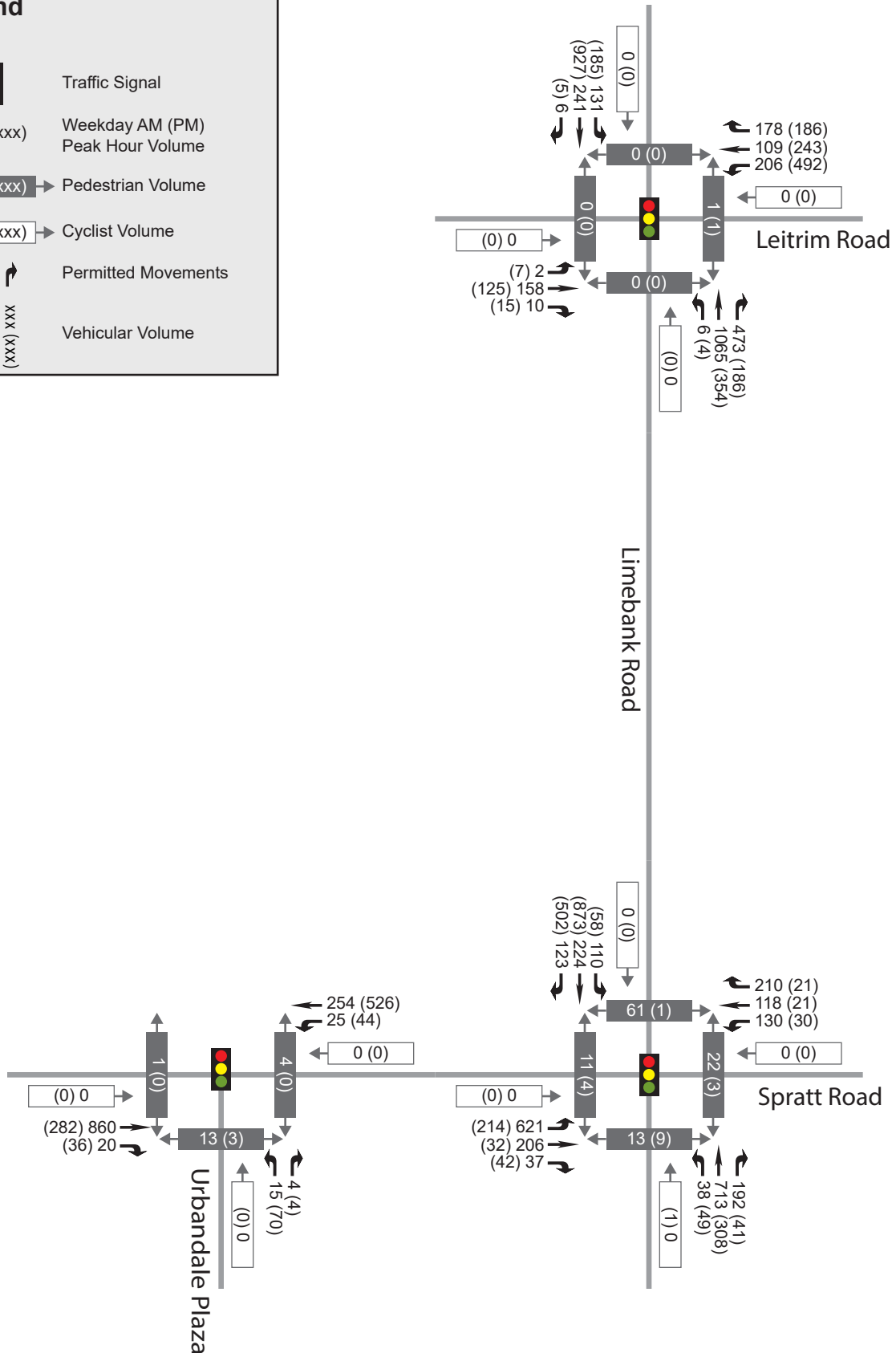
Cyclist Volume



Permitted Movements



Vehicular Volume



## Legend



Traffic Signal



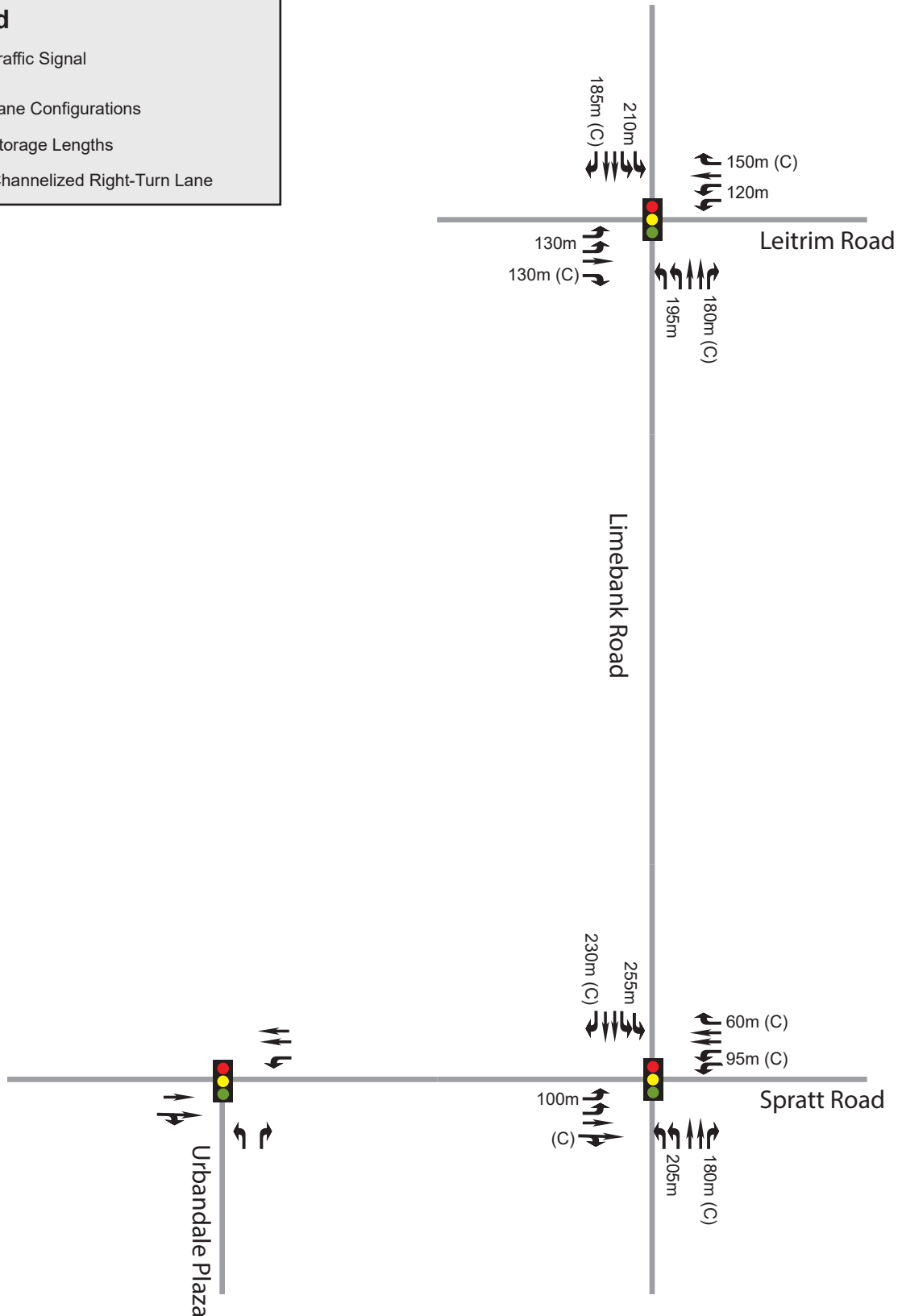
Lane Configurations

xxxm

Storage Lengths

(C)

Channelized Right-Turn Lane



### 3.8 Exemptions Review

The TIA Guidelines provide exemption considerations for elements of the Design Review and Network Impact components. **Table 5** summarizes the TIA modules that are not applicable to this study.

Table 5 - Exemptions Review

| TIA MODULE                           | ELEMENT                       | EXEMPTION CONSIDERATIONS                                                                                                                                                                                               | REQUIRED                                                                              |
|--------------------------------------|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <b>DESIGN REVIEW COMPONENT</b>       |                               |                                                                                                                                                                                                                        |                                                                                       |
| 4.1 Development Design               | 4.1.2 Circulation and Access  | <ul style="list-style-type: none"> <li>Only required for site plans</li> </ul>                                                                                                                                         |    |
|                                      | 4.1.3 New Street Networks     | <ul style="list-style-type: none"> <li>Only required for plans of subdivision</li> </ul>                                                                                                                               |    |
| 4.2 Parking                          | 4.2.1 Parking Supply          | <ul style="list-style-type: none"> <li>Only required for site plans</li> </ul>                                                                                                                                         |    |
|                                      | 4.2.2 Spillover Parking       | <ul style="list-style-type: none"> <li>Only required for site plans where parking supply is 15% below unconstrained demand</li> </ul>                                                                                  |    |
| <b>NETWORK IMPACT COMPONENT</b>      |                               |                                                                                                                                                                                                                        |                                                                                       |
| 4.5 Transportation Demand Management | All Elements                  | <ul style="list-style-type: none"> <li>Not required for site plans expected to have fewer than 60 employees and/or students on location at any given time</li> </ul>                                                   |  |
| 4.6 Neighbourhood Traffic Management | 4.6.1 Adjacent Neighbourhoods | <ul style="list-style-type: none"> <li>Only required when the development relies on local or collector streets for access and total volumes exceed ATM capacity thresholds</li> </ul>                                  |  |
| 4.8 Network Concept                  | n/a                           | <ul style="list-style-type: none"> <li>Only required when proposed development generates more than 200 person-trips during the peak hour in excess of the equivalent volume permitted by established zoning</li> </ul> |  |

## 4 Forecasting

### 4.1 Demand Rationalization

The purpose of this section is to rationalize future travel demands within the study area to account for potential capacity limitations in the transportation network and its ability to effectively accommodate the additional demand generated by a new development. The results of the demand rationalization exercise will be used to inform the existing capacity constraints of the adjacent road network and define the site-generated trip characteristics for the proposed development.

#### 4.1.1 Description of Capacity Issues

Based on the recently completed TIA for the 1515 Earl Armstrong Road development (IBI Group, May 2022), the Limebank & Spratt intersection is expected to operate at an acceptable Level of Service (LOS 'D' or better) within the timeframe of this study.

It should be noted, however, that the Draft Riverside South CDP Transportation Update (IBI Group, March 2020) indicates that by 2031, all roadways to/from the north will be constrained in terms of capacity and approximately 32% of person-trips in and out of the community and crossing the Leitrim Screenline (SL8) will need to be via transit as a result.

There are no other documented records of existing or future capacity issues at any of the other study area intersections.

#### 4.1.2 Adjustment to Development Generated Demands

Given the anticipated capacity constraints noted in the CDP Transportation Update, consideration will be given to an increased use of transit by residents and employees of the proposed development.

#### 4.1.3 Adjustment to Background Network Demands

The planned transit network improvements within the study area and constraints to growth in vehicular traffic are expected to result in a shift in background transit mode share once the O-Train Trillium Line Extension is operational in 2022. It is also expected that there will be some modest growth in the active transportation mode share given broad-based investment in active transportation infrastructure and Transportation Demand Management (TDM) measures required for all new development.

As indicated above, it is expected that 32% of trips in the broader area will be via transit by 2031. The 2013 Transportation Master Plan (TMP) also indicates that the 2031 active transportation (i.e. walking and cycling) mode share target for local trips within the community is 24%.

Based on the above targets and the community-wide mode share recorded in 2011 O-D Survey, it is expected that by 2031, overall community-wide vehicle usage will decrease by 17% as people shift to transit and active modes of transportation. An adjustment factor has therefore been applied to background traffic volumes to reflect that shift in travel modes.

### 4.2 Development Generated Traffic

The following subsections describe the trip generation methodology employed to estimate the trip generation of the industrial and residential portions of the proposed development. The trip generation of the Institutional/Fire Hall portion of the site (Block 13) has not been included in the analysis given the low volume of vehicle trips generated by this land use.

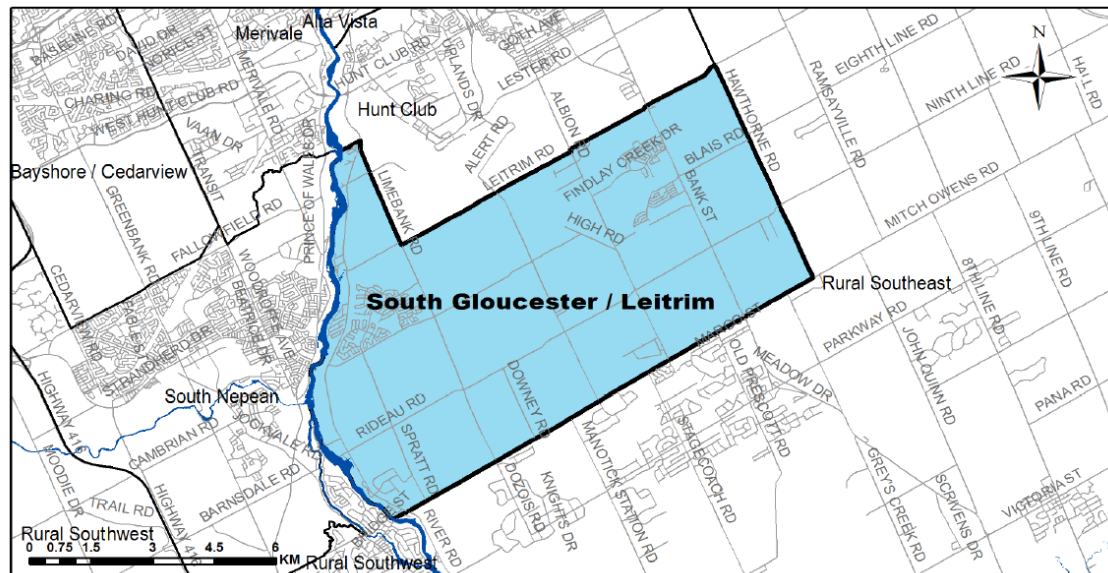
#### 4.2.1 Industrial Trip Generation Methodology (Blocks 1-11)

Peak hour industrial site-generated traffic volumes were developed using the Institute of Transportation Engineers' (ITE) Trip Generation Manual (11<sup>th</sup> Edition) along with the 2020 TRANS Trip Generation Manual. The TIA Guidelines indicate that vehicle-trip generation rates from the ITE Trip Generation Manual should be converted to person-trips through the application of a 1.28 vehicle-to-person-trip conversion factor.

Mode share targets were developed based on the local mode share distributions from the South Gloucester/Leitrim Traffic Assessment Zone (TAZ) in the 2020 TRANS Trip Generation Manual Summary Report for employment land uses. These mode share targets were adjusted to account for the planned improvements in transit, pedestrian and cycling infrastructure in the vicinity of the proposed development.

The extents of the South Gloucester/Leitrim TAZ are illustrated in **Figure 9** below.

Figure 9 - South Gloucester/Leitrim TAZ



Source: 2011 O-D Survey

##### 4.2.1.1 Baseline Vehicle Trip Generation

Peak hour vehicular traffic volumes associated with the proposed development were determined using appropriate peak hour trip generation rates from the ITE Trip Generation Manual.

The vehicular trip generation results for the proposed development have been summarized in **Table 6** below.

Table 6 - Baseline Vehicular Trip Generation Results: Industrial Park

| LAND USE        | SIZE (EMPLOYEES) | PERIOD | GENERATED TRIPS (VPH) |     |       |
|-----------------|------------------|--------|-----------------------|-----|-------|
|                 |                  |        | IN                    | OUT | TOTAL |
| Industrial Park | 2113             | AM     | 677                   | 110 | 787   |
|                 |                  | PM     | 146                   | 586 | 732   |

Notes: vph = vehicles per hour

#### 4.2.1.2 Person Trip Generation

The TIA Guidelines indicate that a 1.28 vehicle-to-person-trip conversion rate should be utilized to convert the baseline vehicular trip generation results into person trips.

The resulting number of site-generated person-trips is summarized in **Table 7** below.

Table 7 - Person-Trip Generation: Industrial Park

| LAND USE        | PERIOD | PERSON TRIPS (PPH) |     |       |
|-----------------|--------|--------------------|-----|-------|
|                 |        | IN                 | OUT | TOTAL |
| Industrial Park | AM     | 867                | 141 | 1008  |
|                 | PM     | 187                | 749 | 936   |

Notes: pph = persons per hour

#### 4.2.1.3 Mode Share Proportions

The 2020 TRANS Trip Generation Manual Summary Report provides approximations of the existing modal share within the South Gloucester/Leitrim Traffic Assessment Zone (TAZ) for employment land uses. Relevant extracts from the 2020 TRANS Trip Generation Manual Summary Report are provided in **Appendix F**.

The O-Train Trillium Line Extension will terminate at Limebank Station, 1.8km south of the proposed development, and the site's relative proximity to this station will enhance the attractiveness of transit as a method of getting to/from the proposed development, provided direct transit service is provided between the LRT station and the proposed development.

As discussed previously, based on the latest evaluation of mode share targets from the Draft Riverside South CDP Transportation Update (IBI Group, March 2020), a community-wide transit mode share target of 32% is now expected for 2031. The community, however, is primarily residential in nature and therefore this target is more representative of the expected mode share for residential land uses. Based on the 2020 TRANS Trip Generation Manual Summary Report, the transit mode share for employment land uses is generally 14% lower than it is for residential land uses therefore a transit mode share target of 18% is expected to be achievable for this development.

Given the site's location and the fact that the realigned Leitrim Road will have a rural cross-section with no sidewalks and only paved shoulders for bicycles initially, it is anticipated that a negligible number of employees will walk to work. As such, a walking mode share target of 0% is proposed for this site. It should be noted that the lack of sidewalks on the realigned Leitrim Road is not expected to impact the transit mode share as it is anticipated that there will be pedestrian facilities connecting the transit stops to the on-site buildings established through the Site Plan Control process for each development parcel.

The existing mode shares for the TAZ and the proposed mode share targets for the proposed development are identified in **Table 8** below.

Table 8 - Existing and Target Mode Share Distributions: Industrial Park

| MODE           | EXISTING MODE SHARE | MODE SHARE TARGETS |
|----------------|---------------------|--------------------|
| Auto Driver    | 89%                 | 75%                |
| Auto Passenger | 7%                  | 6%                 |
| Transit        | 2%                  | 18%                |
| Bike           | 1%                  | 1%                 |
| Walk           | 1%                  | 0%                 |
| <b>TOTAL</b>   | <b>100%</b>         | <b>100%</b>        |

#### 4.2.1.4 Trip Generation by Mode

The mode share targets from **Table 8** were applied to the number of development generated peak hour person-trips to determine the number of trips per travel mode.

The results after applying the mode share targets and adjustment factors are summarized in **Table 9**.

Table 9 – Development-Generated Peak Hour Person Trips by Mode: Industrial Park

| MODE                      | AM         |            |              | PM         |            |            |
|---------------------------|------------|------------|--------------|------------|------------|------------|
|                           | IN         | OUT        | TOTAL        | IN         | OUT        | TOTAL      |
| Auto Driver               | 650        | 106        | 756          | 140        | 562        | 702        |
| Auto Passenger            | 52         | 9          | 61           | 11         | 45         | 56         |
| Transit                   | 156        | 25         | 181          | 34         | 135        | 169        |
| Bike                      | 9          | 1          | 10           | 2          | 7          | 9          |
| Walk                      | 0          | 0          | 0            | 0          | 0          | 0          |
| <b>Total Person Trips</b> | <b>867</b> | <b>141</b> | <b>1,008</b> | <b>187</b> | <b>749</b> | <b>936</b> |

#### 4.2.1 Residential Trip Generation Methodology (Block 14)

Peak hour residential site-generated traffic volumes were developed using the 2020 TRANS Trip Generation Summary Report. The TRANS trip generation rates are based on blended rates derived from the 49 trip generation studies undertaken between 2008 and 2012, the Institute of Transportation Engineers (ITE) Trip Generation Manual (10<sup>th</sup> Edition) and the 2011 TRANS O-D Travel Survey. Separate peak period person-trip generation rates were developed for single-detached housing, low-rise multifamily housing (i.e. two storeys or less) and high-rise multifamily housing (i.e. three storeys or more). Site-generated peak period person-trips were estimated using these rates and subsequently subdivided based on representative mode share percentages applicable to the study area. Mode-specific adjustment factors were then applied to these peak period person-trips to determine the number of peak hour vehicle, passenger, transit, cycling and pedestrian trips.

Local mode share targets were based on the 2020 TRANS Trip Generation Summary Report which were adjusted to reflect the context of the site.

**Appendix F** contains relevant 2020 TRANS and 2011 Origin-Destination (O-D) Survey extracts utilized for this study.

#### 4.2.1.1 Peak Period Trip Generation

Peak period person-trips associated with the proposed development were determined using the trip generation rates from the 2020 TRANS Trip Generation Summary Report. The peak period person-trip generation results for the proposed development have been summarized in **Table 10** below.

Table 10 - Peak Period Person-Trip Generation: Residential

| Land Use                           | Size (units) | Period | PEAK PERIOD PERSON-TRIPS |     |       |
|------------------------------------|--------------|--------|--------------------------|-----|-------|
|                                    |              |        | In                       | Out | Total |
| Multi-Unit (Low-Rise) <sup>1</sup> | 38           | AM     | 15                       | 36  | 51    |
|                                    |              | PM     | 34                       | 26  | 60    |

Notes: <sup>1</sup> - 2020 TRANS defines 'Multi-Unit Low-Rise' as two storeys or less.

#### 4.2.1.2 Mode Share Proportions

The TRANS Trip Generation Manual (October 2020) provides blended mode shares based on the 2011 TRANS Origin-Destination (O-D) Survey for multi-unit low-rise housing such as townhomes.

The 2013 TMP indicates that the 2031 active transportation (i.e. walking and cycling) mode share for local trips within the community is 24%. Based on the 2011 TRANS O-D Survey, approximately 34% of residential trips are local, therefore, an active transportation mode share target of 8% (24% of 34%) is proposed for the residential portion of this site. Given the proximity to nearby amenities such as the adjacent Urbandale Plaza Shopping Centre to the south, it is expected that this level of active transportation use will be achievable.

The existing mode shares for the TAZ and the proposed mode share targets for the proposed development are identified in **Table 11** below.

Table 11 - Existing and Target Mode Share Distributions: Residential

| MODE           | EXISTING MODE SHARE | MODE SHARE TARGET |
|----------------|---------------------|-------------------|
| Auto Driver    | 61%                 | 46%               |
| Auto Passenger | 19%                 | 14%               |
| Transit        | 16%                 | 32%               |
| Bike           | 1%                  | 2%                |
| Walk           | 3%                  | 6%                |
| <b>Total</b>   | <b>100%</b>         | <b>100%</b>       |

#### 4.2.1.3 Trip Generation by Mode

The mode share targets from **Table 11** were applied to the number of development generated peak period person-trips to determine the number of trips per travel mode. The peak period to

peak hour adjustment factors from Table 4 of the 2020 TRANS Trip Generation Summary Report were subsequently applied in order to convert to peak hour trips.

The results after applying the mode share targets are summarized in **Table 12**.

Table 12 – Development-Generated Peak Hour Person Trips by Mode: Residential

| MODE<br>(MODE SHARE)      | AM       |           |           | PM        |           |           |
|---------------------------|----------|-----------|-----------|-----------|-----------|-----------|
|                           | IN       | OUT       | TOTAL     | IN        | OUT       | TOTAL     |
| Auto Driver               | 3        | 8         | 11        | 7         | 5         | 12        |
| Auto Passenger            | 1        | 2         | 3         | 2         | 2         | 4         |
| Transit                   | 3        | 6         | 9         | 5         | 4         | 9         |
| Cycling                   | 0        | 0         | 0         | 0         | 0         | 0         |
| Walking                   | 1        | 1         | 2         | 1         | 1         | 2         |
| <b>Total Person Trips</b> | <b>8</b> | <b>17</b> | <b>25</b> | <b>15</b> | <b>12</b> | <b>27</b> |

#### 4.2.2 Trip Generation Reduction Factors

##### Deduction of Existing Development Trips

Not Applicable: The proposed development lands are currently undeveloped, and do not generate any traffic.

##### Pass-by Traffic

Not Applicable: Both the residential and industrial land uses within the proposed development do not generate pass-by trips, therefore the trip reduction factor is not applicable for this TIA.

##### Synergy/Internalization

Not Applicable: Given that the residential and industrial portions of the site are physically separated from each other, no internal trip reduction has been applied.

#### 4.2.3 Trip Distribution and Assignment

Given the different travel characteristics of the two land uses contained within the proposed development, separate trip distributions have been calculated for each.

##### **4.2.3.1 Industrial Trip Distribution**

It is anticipated that the distribution of **regional** site-generated industrial traffic will align with distribution of trips to the district identified in the 2011 O-D Survey for the industrial section. With consideration of Google Maps travel times during the weekday peak hours, regional site-generated traffic was distributed as follows:

- 50% to/from the North via Limebank Road
- 30% to/from the South via Limebank Road
- 20% to/from the East via Leitrim Road

The distribution of **local** site-generated traffic (18% for industrial land uses) was based primarily on the concentrations of existing and future residential land uses within the Riverside South community:

- 65% to/from the South via Limebank Road
- 15% to/from the East via Spratt Road
- 20% to/from the West via Spratt Road

#### **4.2.3.2 Residential Trip Distribution**

Based on existing traffic patterns within the study area, it is anticipated that traffic generated by the residential land uses will distribute as follows:

- 30% to/from the North via Limebank Road
- 30% to/from the South via Limebank Road
- 20% to/from the East
  - 5% via Spratt Road
  - 15% via Leitrim Road
- 20% to/from the West via Spratt Road

#### **4.2.3.3 Trip Assignment**

Applying the estimated number of new auto trips to the above distributions, future site-generated traffic volumes from **Table 9** and **Table 12** are illustrated at each of the study area intersections in **Exhibit 6**.



**LEGEND**

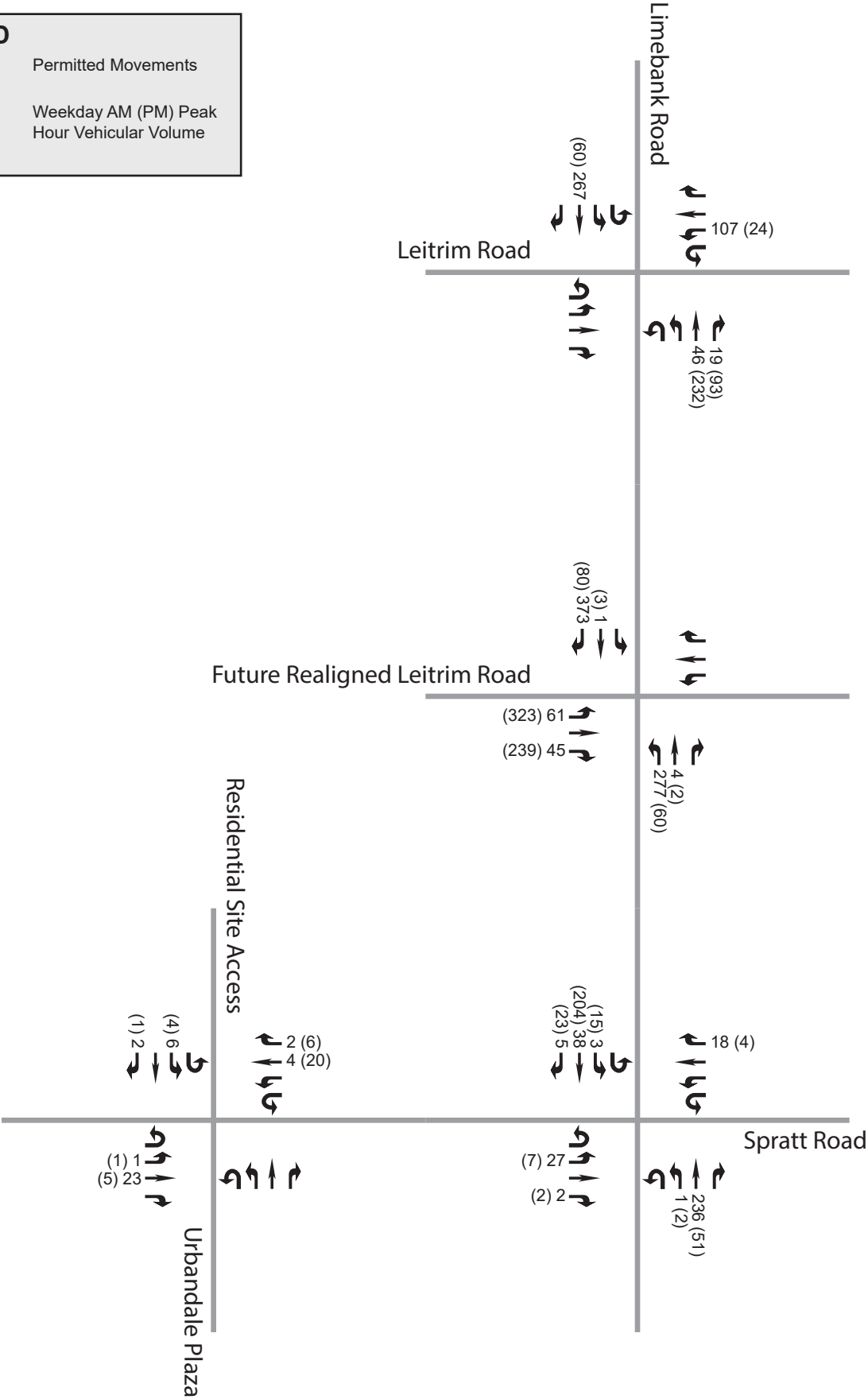


Permitted Movements

xxx  
xxx  
xxx

xxx (xxx)  
xxx (xxx)  
xxx (xxx)

Weekday AM (PM) Peak  
Hour Vehicular Volume



## 4.3 Background Network Traffic

### 4.3.1 Changes to the Background Transportation Network

To properly assess future traffic conditions, planned modifications to the transportation network that may impact travel patterns or demand within the study area have been considered. The Scoping section of this TIA reviewed the anticipated changes to the study area transportation network based on the Transportation Master Plan (TMP) and the Riverside South CDP.

Based on a review of these planning policy documents, the only significant roadway modification within the timeframe of this study is the planned widening of Earl Armstrong Road between 2030 and 2031. Although this may divert traffic from Limebank Road to Bowesville Road, for the purpose of this study it has been conservatively assumed that this will not occur.

### 4.3.2 General Background Growth Rates

The background growth rate is intended to represent regional growth from outside the study area that will travel along the adjacent road network. Based on the recently completed TIA for 1515 Earl Armstrong Road (IBI Group, May 2022), two-way traffic volumes on Limebank Road are anticipated to increase at a rate of approximately 4.5% per year which reflects the rapid pace of development that is projected to occur within the Riverside South community.

To establish the anticipated growth rate along Leitrim Road, the traffic volume projections from the Leitrim Road Realignment and Widening Planning and Environmental Assessment Study Environment Study Report (ESR) were referenced. Multiple scenarios were developed as part of the ESR, but Scenario 10 is expected to be most representative of future conditions as it includes full buildout of the Riverside South community as well as the LRT extension to Riverside South. Based on Scenario 10 traffic projections, eastbound volumes along Leitrim Road are anticipated to increase at 5.7% per year while westbound volumes are anticipated to increase at 1.5% per year.

These growth rates have only been applied to through movements on arterial roadways, as well as all movements at arterial-to-arterial intersections.

### 4.3.3 Other Area Development

Future potential developments of significance within the study area were previously identified Section 3.3.2. These developments have been accounted for in the estimation of future background volume projections and represent specific areas of growth within the study area and are therefore considered in addition to the general background growth rate discussed previously.

## 4.4 Traffic Volume Summary

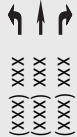
### 4.4.1 Future Background Traffic Volumes

Future background traffic volumes projections have been established by combining the adjacent development traffic and background traffic derived through the application of a growth rate, as discussed previously. **Exhibit 7** presents the future background traffic volumes anticipated for the 2031 analysis year.

### 4.4.2 Future Total Traffic Volumes

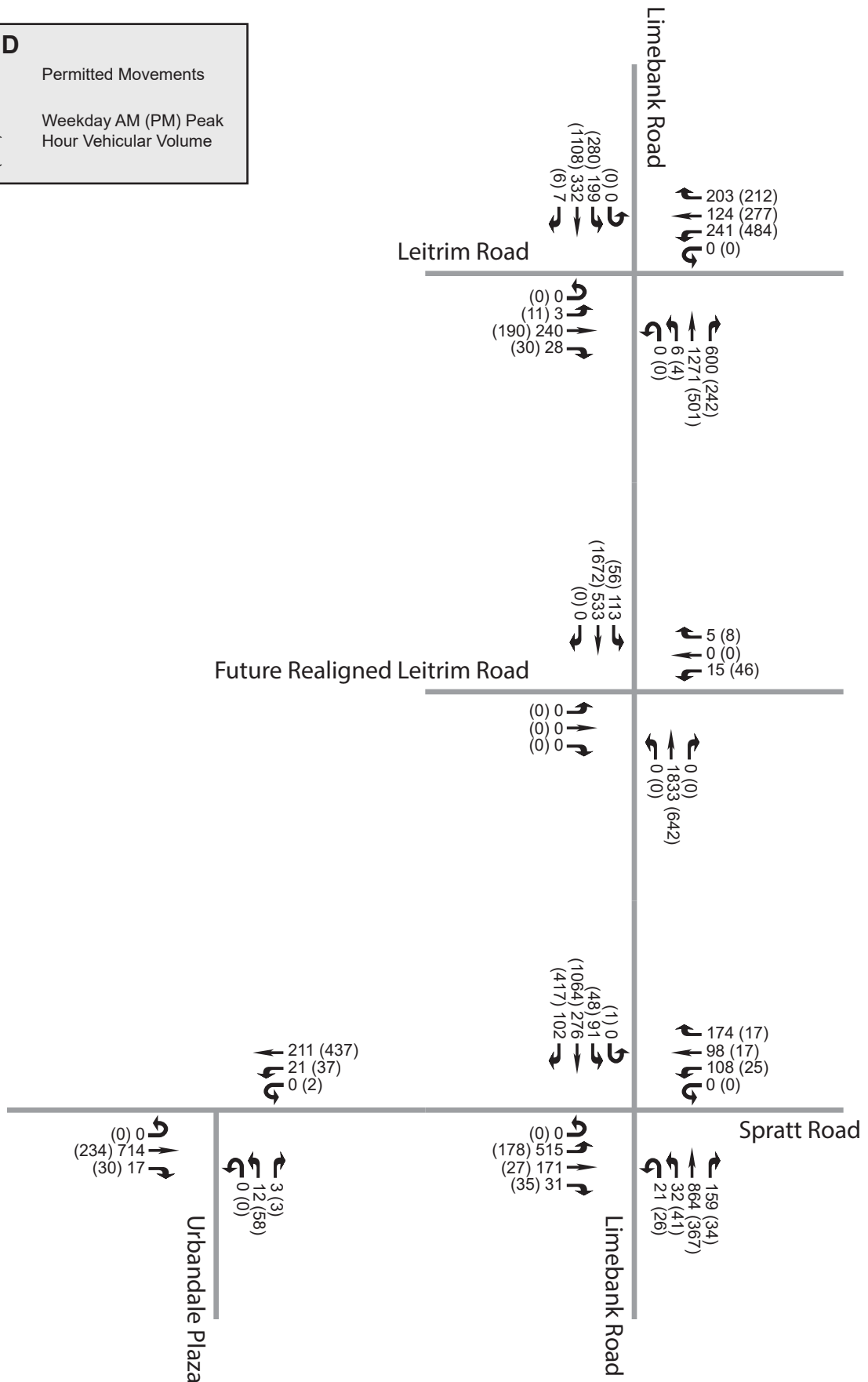
Future total volumes have been derived by combining the site-generated traffic volumes with future background volumes. **Exhibit 8** presents the future total traffic volumes anticipated for the 2031 analysis year.

## LEGEND



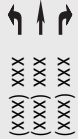
Permitted Movements

Weekday AM (PM) Peak  
Hour Vehicular Volume



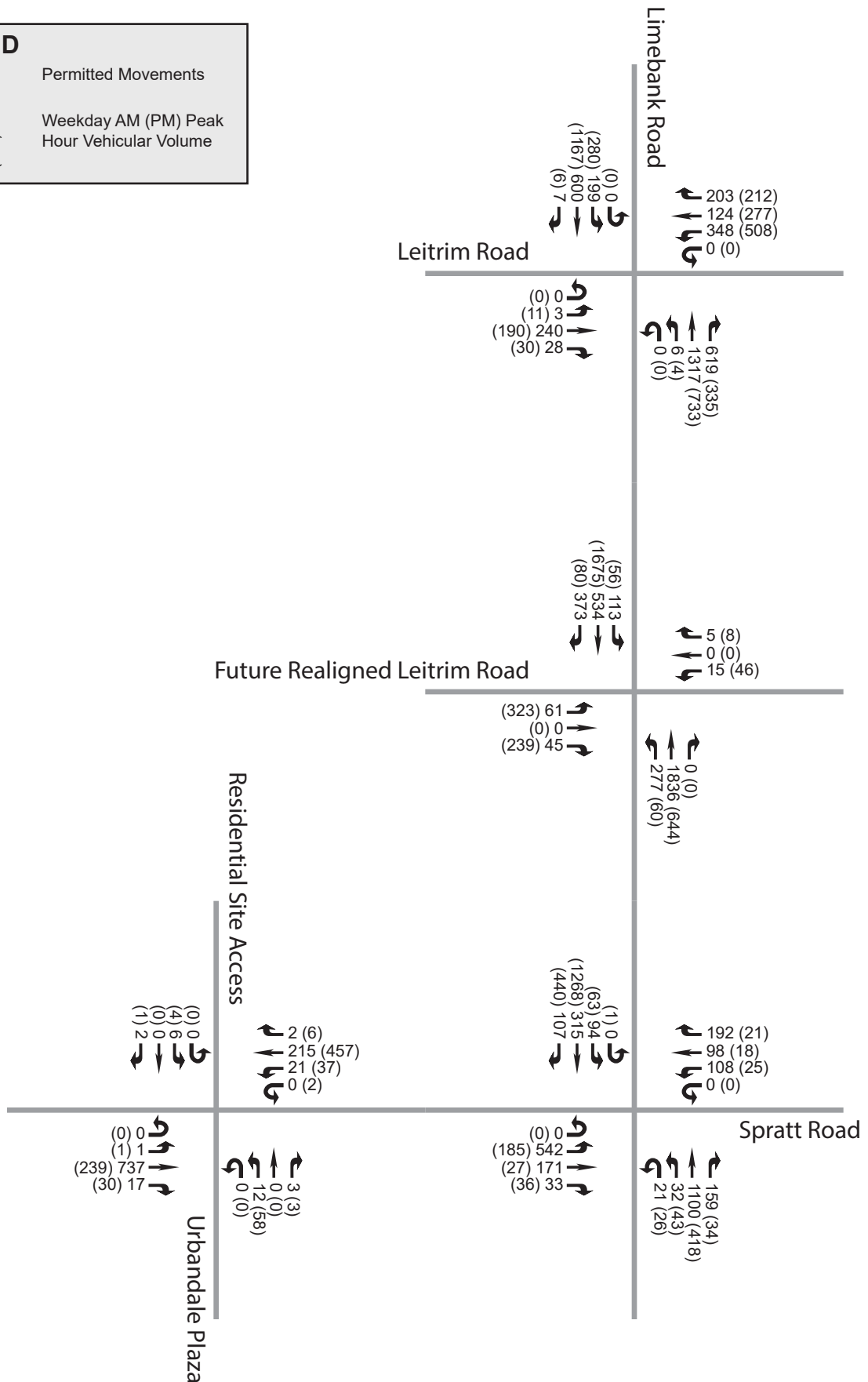


## LEGEND



Permitted Movements

Weekday AM (PM) Peak  
Hour Vehicular Volume



## 5 Analysis

### 5.1 Development Design

#### 5.1.1 Design for Sustainable Modes

Currently there are concrete sidewalks and on-street bike lanes on both Limebank Road and Spratt Road (east of the Urbandale Plaza intersection).

Per the Official Plan, it is expected that concrete sidewalks will be provided on at least one side of the roadway within the residential portion of the site (Block 14). Within the industrial/employment section of the development, the segment of the future realigned Leitrim Road will initially have a rural cross-section with no sidewalks and only paved shoulders for cyclists. In the long-term, it is expected that the realigned Leitrim Road may be upgraded to a four-lane ‘complete street’ with concrete sidewalks and cycle tracks on both sides, thereby further improving access to sustainable modes of transportation, however, there is currently no drainage solution to provide urbanization of this roadway. For this reason, all proposed local roads within the employment lands (Blocks 1-11) will also have a rural cross-section.

Until such time the realigned Leitrim Road becomes a ‘complete street’, it is expected that pedestrian facilities will be provided within each development block to provide access to the realigned Letirim Road to ensure that employees will be able to access transit service within a reasonable walking distance of their workplace.

Based on the size and configuration of the planned subdivision, it is recommended that additional bus stops be provided along the realigned Leitrim Road at the Limebank Road intersection, the Street #2 intersection and the westernmost intersection with Street #1 in order to ensure adequate transit coverage within the proposed development.

It is expected that TDM-Supportive Development Design and Infrastructure Checklists will be completed at the Site Plan Control application stage once the development details of each block are known. A blank copy of the TDM-Supportive Development Design and Infrastructure Checklist for non-residential developments has been provided in **Appendix G** for reference, indicating which elements are not applicable to subdivisions.

#### 5.1.2 New Street Networks

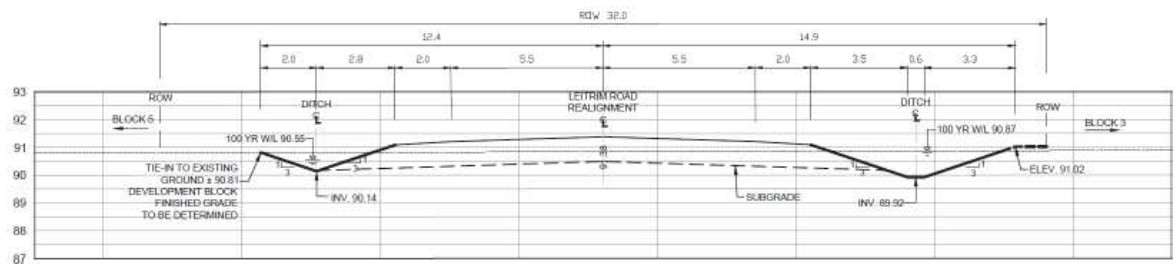
The road network within the proposed development includes the future realigned Leitrim Road as well as Street #1, Street #2, and Street #3. The alignment of the internal roadways has been designed to ensure that the on-site road network follows the form of a modified grid pattern with relatively short block lengths. The overall road network design will promote driver behaviour that is consistent with the roadway classification. **Table 13** summarizes the designation and right-of-way for the proposed roadways.

Table 13 - Proposed Roadways

| ROADWAY                | DESIGNATION | RIGHT-OF-WAY (m) |
|------------------------|-------------|------------------|
| Realigned Leitrim Road | Arterial    | 32.0             |
| Street #1              | Local       | 18.0             |
| Street #2              | Local       | 18.0             |
| Street #3              | Local       | 18.0             |

The segment of the realigned Leitrim Road that passes through the subject lands will be generally limited to a 32m right-of-way and configured with a rural cross-section with 11m of asphalt (two 5.5m lanes with 2.0m paved shoulders). This roadway will terminate with a cul-de-sac at the northern property limit. The interim cross-section is shown in **Figure 10**.

Figure 10 - Proposed Realigned Leitrim Road Configuration



Source: Assessment of Adequacy of Public Services Report (IBI Group, July 2022)

## 5.2 Boundary Streets

The proposed development will be accessed via Spratt Road, Limebank Road and the future realigned Leitrim road. Segment-based Multi-Modal Level of Service (MMLOS) analysis has therefore been completed for these roadways.

### 5.2.1 Mobility

The MMLOS targets for each road vary based on a variety of factors such as the Official Plan designation/ policy area, as well as road classification, cycling network and transit network classification and whether the road is on a truck route.

Segment-based MMLOS results for the segments of Limebank Road, Spratt Road and the realigned Leitrim Road adjacent or within to the proposed development are provided in **Table 14** below.

Details of the MMLOS analysis are provided in **Appendix H**.

Table 14 - Segment MMLOS

| LOCATION                        | LEVEL OF SERVICE BY MODE |                         |                                  |                                  |
|---------------------------------|--------------------------|-------------------------|----------------------------------|----------------------------------|
|                                 | PEDESTRIAN (PLOS)        | BICYCLE (BLOS)          | TRANSIT (TLOS)                   | TRUCK (TkLOS)                    |
| Limebank Road (Existing)        | B<br>(Target: C)         | <b>E</b><br>(Target: C) | D<br>(Target: N/A <sup>1</sup> ) | A<br>(Target: B)                 |
| Spratt Road (Existing)          | B<br>(Target: C)         | <b>F</b><br>(Target: B) | D<br>(Target: N/A <sup>1</sup> ) | A<br>(Target: N/A <sup>2</sup> ) |
| Realigned Leitrim Road (Future) | <b>F</b><br>(Target: C)  | <b>F</b><br>(Target: E) | D<br>(Target: N/A <sup>1</sup> ) | C<br>(Target: D)                 |

Notes:

<sup>1</sup> – There are no TLOS targets for roadways that are not part of the rapid transit or transit priority network.

<sup>2</sup> – There is no TkLOS target for collector roads that are not truck routes.

The results of the segment-based MMLOS presented above indicate that both existing roadways are not currently meeting their BLOS targets. Providing grade-separated cycle tracks is expected

to improve the BLOS to 'A'. It should be noted that these deficiencies in the segment-based MMLOS along the boundary streets represent existing conditions.

The future realigned Leitrim Road is not expected to meet its PLOS and BLOS targets given its interim rural cross-section. A relatively low volume of cyclists and pedestrians is expected within the subdivision in the foreseeable future until such time the roadway is extended north to Leitrim Road or east of Limebank Road, providing network connectivity within the community. Paved shoulders serve as a sufficient bicycle facility in the interim. Should the realigned Leitrim Road be urbanized and widened to its ultimate configuration, complete with sidewalks and cycles tracks, this will greatly improve the PLOS and BLOS of this roadway segment. As indicated in the future (2031) volume projections, the segment of realigned Leitrim Road is not expected to experience traffic volumes that would warrant four travel lanes. A two-lane roadway will therefore be sufficient for the foreseeable future.

### 5.2.2 Road Safety

A summary of all reported collisions within the study period over the past five years was presented in Section 3.2.4. The City requires a safety review if at least six collisions for any one movement or of a discernible pattern have occurred over the study period. Based on these criteria, the Limebank & Spratt intersection and the segment of Limebank between Leitrim Road and Spratt Road may require further review.

#### Limebank & Spratt Intersection

Over a five-year period, a total of three angle, six rear-end and three single motor vehicle (SMV) collisions were recorded at the Limebank & Spratt intersection. Four of the six rear-end collisions occurred under dark or dusk lighting conditions which may be a reflection of driver behaviour during nighttime conditions, particularly as the collisions that occurred under these conditions involved drivers travelling too fast for the conditions, failing to yield the right of way and following too closely. Half of the rear-end collisions involved right-turning traffic and the remainder involved through traffic.

#### Limebank Road between Leitrim Road and Spratt Road

Between 2016 and 2020, a total of two rear-end, four SMV, and one 'other' collision occurred on Limebank Road between Leitrim Road and Spratt Road and there were no significant reoccurring collision patterns observed.

## 5.3 Access Intersections

### 5.3.1 Location and Design of Access

The proposed development will provide direct access to the arterial road and major collectors network at the following locations:

- **Limebank Road & Realigned Leitrim Road** – This intersection will provide access to the industrial/employment portion of the proposed development. Based on the Leitrim Road Widening and Realignment ESR, this future signalized intersection will include dual westbound left-turn lanes, single left-turn lanes on all other approaches and a northbound right-turn lane. The design of the intersection, however, provisions for the eventual implementation of dual left-turn lanes on all approaches. The planned intersection configuration identified in the ESR is illustrated in **Figure 5**.
- **Spratt Road & Urbandale Plaza/Residential Site Access**– This intersection is located approximately 225m west of the Spratt & Limebank intersection. It is currently a three-legged signalized intersection which provides access to Urbandale Plaza. A new private approach with a single shared through-right-left lane will be provided on the north side of

the intersection to provide access to the residential portion of the site. A new eastbound left-turn lane will be required to facilitate left-turns into the site and reduce potential conflicts with eastbound through traffic.

The design of these intersections will be submitted to the City at a later date.

Access to the lands designated as Institutional/Fire Hall (Block 13) may be provided via new private approaches on Spratt Road and Limebank Road. To ensure that emergency vehicles can safely exit the site, the following measures should be considered:

- The new private approaches should be placed as far as possible from the Limebank & Spratt intersection to minimize conflicts with left-turn queues.
- Median opening should be provided to allow emergency vehicles to cross the median and turn left out onto Limebank Road and Spratt Road.
- Pavement markings and signage should be provided on Limebank Road and Spratt Road to indicate to drivers that they should not block the accesses to the fire hall.
- Signal pre-emption should be implemented at the Limebank & Spratt intersection to help clear vehicular queues at the intersection for egress of emergency vehicles.

### **5.3.2 Intersection Control**

#### **5.3.2.1 Traffic Signal Warrants**

Based on the projected total traffic volumes presented in this study, the proposed Limebank & Realigned Leitrim intersection warrants traffic signals under Future (2031) Total Traffic conditions as a 4-legged intersection.

The results of the traffic signal warrants are provided in **Appendix I**.

#### **5.3.2.2 Roundabout Analysis**

As per the City's Roundabout Implementation Policy, intersections that satisfy any of the following criteria should be screened utilizing the Roundabout Initial Feasibility Screening Tool:

- At any new City intersection
- Where traffic signals are warranted
- At intersections where capacity or safety problems are being experienced

The results of the Roundabout Initial Feasibility Screening Tool indicate that a roundabout is not recommended at the Limebank & Realigned Leitrim intersection.

The results of the Roundabout Initial Feasibility Screening Tool are provided in **Appendix I**.

### **5.3.3 Intersection Design (MMLOS)**

The results of the MMLOS analysis for the access intersections have been provided in Section 5.7.3.

## **5.4 Transportation Demand Management (TDM)**

The City of Ottawa is committed to requiring all new developments to include Transportation Demand Management (TDM) measures in an effort to reduce automobile dependence, particularly during the weekday peak travel periods.

#### **5.4.1 Context for TDM**

As described in the Forecasting section of this report, the industrial and residential trip generation mode share targets used to estimate future development traffic were based on the local mode share distributions from the South Gloucester/Leitrim Traffic Assessment Zone (TAZ) in the 2020 TRANS Trip Generation Manual Summary Report and were adjusted based on the transit and active transportation mode share targets identified in the Draft Riverside South CDP Transportation Update and 2013 TMP.

The proposed development is not located in a Design Priority Area (DPA) or Transit-Oriented Development (TDO) zone.

#### **5.4.2 Need and Opportunity**

To promote the use of transit by employees of the industrial park, bus stops along the segment of the realigned Leitrim Road within the proposed development are recommended. Given the relative proximity to the future Limebank LRT Station 1.8km to the south providing access to the City-wide rapid transit network, this will encourage employees to use transit. Lack of transit or pedestrian access to the employment portion of the site could result in increased personal vehicle use. It is important to note, however, that both existing boundary streets (Limebank Road and Spratt Road) include facilities for cyclists and pedestrians and signalized access intersections will provide controlled pedestrian crossing opportunities for safe access to bus stops.

#### **5.4.3 TDM Program**

It is expected that the TDM Measures Checklists for non-residential and residential developments will be completed at the Site Plan Control application stage once more details are known about the developments that will be occupying each block. Blank copies of the City of Ottawa's TDM Measures Checklists for non-residential and residential developments have been provided in **Appendix G** for reference.

### **5.5 Neighbourhood Traffic Management**

#### **5.5.1 Adjacent Neighbourhoods**

The residential portion of the proposed development (Block 14) is dependent on Spratt Road, a major collector, for access to the residential portion of the site. The TIA Guidelines indicate that the livability threshold for a major collector is 600 vehicles per hour per lane. Volumes in excess of this threshold may impact resident comfort but do not necessarily indicate that the roadway cannot accommodate this level of traffic.

Traffic volumes along Spratt Road are expected to be as high as 750 vehicle per hour in one direction during the weekday morning and afternoon peak hours. Given the four-lane cross-section of Spratt Road, the livability threshold is 1,200 vehicles per hour per direction and therefore the livability threshold is not expected to be exceeded by this relatively minor increase in traffic.

### **5.6 Transit**

#### **5.6.1 Route Capacity**

The estimated future total transit passenger demand within the study area was provided in Section 4.2.1.4 and 4.2.1.3. The results have been summarized in **Table 15**.

Table 15 - Future Development Generated Transit Demand

| PERIOD | TRANSIT TRIPS |     |
|--------|---------------|-----|
|        | In            | Out |
| AM     | 159           | 31  |
| PM     | 39            | 139 |

Based on the number of transit trips generated by the proposed development during the weekday morning and afternoon peak hours, additional transit capacity may be required to accommodate the transit demand. The projected volume of transit users is likely to warrant the extension of transit service into the employment lands upon full build-out.

## 5.6.2 Transit Priority Measures

Limebank Road is not presently identified as a transit priority corridor in the Official Plan (Schedule C2). It is not expected that transit priority measures will be required at any of the study area intersections in order to support development-generated transit demand.

## 5.7 Intersection Operational Review

The following sections summarize the methodology and results of the Multi-Modal Level of Service (MMLOS) analysis conducted within the study area.

### 5.7.1 Intersection Analysis Criteria (Automobile)

The following section outlines the City of Ottawa's methodology for determining motor vehicle Level of Service (LOS) at signalized and unsignalized intersections.

#### 5.7.1.1 Signalized Intersections

In qualitative terms, the Level of Service (LOS) defines operational conditions within a traffic stream and their perception by motorists. A LOS definition generally describes these conditions in terms of such factors as delay, speed and travel time, freedom to manoeuvre, traffic interruptions, safety, comfort and convenience. LOS can also be related to the ratio of the volume to capacity (v/c) which is simply the relationship of the traffic volume (either measured or forecast) to the capability of the intersection or road section to accommodate a given traffic volume. This capability varies depending on the factors described above. LOS are given letter designations from 'A' to 'F'. LOS 'A' represents the best operating conditions and LOS 'E' represents the level at which the intersection or an approach to the intersection is carrying the maximum traffic volume that can, practicably, be accommodated. LOS 'F' indicates that the intersection is operating beyond its theoretical capacity.

The City of Ottawa has developed criteria as part of the Transportation Impact Assessment Guidelines, which directly relate the volume to capacity (v/c) ratio of a signalized intersection to a LOS designation. These criteria are presented in **Table 16** below:

Table 16 - LOS Criteria for Signalized Intersections

| LOS | VOLUME TO CAPACITY RATIO (v/c) |
|-----|--------------------------------|
| A   | 0 to 0.60                      |
| B   | 0.61 to 0.70                   |
| C   | 0.71 to 0.80                   |
| D   | 0.81 to 0.90                   |
| E   | 0.91 to 1.00                   |
| F   | > 1.00                         |

The intersection capacity analysis technique provides an indication of the LOS for each movement at the intersection under consideration and for the intersection as a whole. The overall v/c ratio for an intersection is defined as the sum of equivalent volumes for all critical movements at the intersection divided by the sum of capacities for all critical movements.

#### 5.7.1.2 Unsignalized Intersections

The capacity of an unsignalized intersection can also be expressed in terms of the LOS it provides. For an unsignalized intersection, the Level of Service is defined in terms of the average movement delays at the intersection. This is defined as the total elapsed time from when a vehicle stops at the end of the queue until the vehicle departs from the stop line; this includes the time required for a vehicle to travel from the last-in-queue position to the first-in-queue position. The average delay for any particular minor movement at the un-signalized intersection is a function of the capacity of the approach and the degree of saturation.

The Highway Capacity Manual 2010 (HCM), prepared by the Transportation Research Board, includes the following Levels of Service criteria for un-signalized intersections, related to average movement delays at the intersection, as indicated in **Table 17** below.

Table 17 - LOS Criteria for Unsignalized Intersections

| LOS | DELAY (seconds) |
|-----|-----------------|
| A   | <10             |
| B   | >10 and <15     |
| C   | >15 and <25     |
| D   | >25 and <35     |
| E   | >35 and <50     |
| F   | >50             |

The unsignalized intersection capacity analysis technique included in the HCM and used in the current study provides an indication of the Level of Service for each movement of the intersection under consideration. By this technique, the performance of the unsignalized intersection can be compared under varying traffic scenarios, using the Level of Service concept in a qualitative sense. One unsignalized intersection can be compared with another unsignalized intersection using this concept. Level of Service 'E' represents the capacity of the movement under consideration and generally, in large urban areas, Level of Service 'D' is considered to represent an acceptable operating condition. Level of Service 'E' is considered an acceptable operating

condition for planning purposes for intersections located within Ottawa's Urban Core the downtown and its vicinity). Level of Service 'F' indicates that the movement is operating beyond its design capacity.

Roundabout capacity analysis has been carried out using the HCM 2010 methodology.

### **5.7.2 Intersection Capacity Analysis**

Following the established intersection capacity analysis criteria described above, existing and future traffic conditions are analysed using the weekday morning and afternoon peak hour traffic volumes derived in this study.

The Level of Service calculation is based on locally-specific parameters as described in the TIA Guidelines and incorporates existing signal timing plans obtained from the City of Ottawa. The analysis existing conditions utilized a Peak Hour Factor (PHF) of 0.90, while future conditions considers optimized signal timing plans and use of a Peak Hour Factor (PHF) of 1.0 to recognize peak spreading beyond a 15-minute period in congested conditions.

The intersection capacity analysis reports have been provided in **Appendix J**.

#### 5.7.2.1 Existing Traffic

**Table 18** below summarizes the existing traffic operational performance at the study area intersections based on Existing Traffic volumes.

Table 18 - Intersection Capacity Analysis: Existing Traffic

| INTERSECTION             | TRAFFIC CONTROL | AM PEAK HOUR                  |                                      | PM PEAK HOUR                  |                                      |
|--------------------------|-----------------|-------------------------------|--------------------------------------|-------------------------------|--------------------------------------|
|                          |                 | OVERALL LOS<br>(V/C OR DELAY) | CRITICAL MOVEMENTS<br>(V/C OR DELAY) | OVERALL LOS<br>(V/C OR DELAY) | CRITICAL MOVEMENTS<br>(V/C OR DELAY) |
| Limebank & Leitrim       | Signalized      | C (0.76)                      | NBT (0.86)                           | B (0.69)                      | WBL (0.77)                           |
| Limebank & Spratt        | Signalized      | C (0.73)                      | EBL (0.78)                           | A (0.57)                      | SBT (0.72)                           |
| Spratt & Urbandale Plaza | Signalized      | A (0.32)                      | EBTR (0.32)                          | A (0.23)                      | NBL (0.41)                           |

As indicated above, the study area intersections are generally operating at an acceptable Level of Service (i.e. LOS 'E' or better).

#### 5.7.2.2 Future (2031) Background Traffic

An intersection capacity analysis has been undertaken using the Future (2031) Background Traffic volumes presented previously in **Exhibit 7**.

The results of the intersection capacity analysis are summarized below.

Table 19 - Intersection Capacity Analysis: Future (2031) Background Traffic

| INTERSECTION                 | TRAFFIC CONTROL | AM PEAK HOUR                  |                                      | PM PEAK HOUR                  |                                      |
|------------------------------|-----------------|-------------------------------|--------------------------------------|-------------------------------|--------------------------------------|
|                              |                 | OVERALL LOS<br>(V/C OR DELAY) | CRITICAL MOVEMENTS<br>(V/C OR DELAY) | OVERALL LOS<br>(V/C OR DELAY) | CRITICAL MOVEMENTS<br>(V/C OR DELAY) |
| Limebank & Leitrim           | Signalized      | D (0.85)                      | NBT (0.90)                           | B (0.69)                      | SBT (0.76)                           |
| Limebank & Spratt            | Signalized      | B (0.70)                      | NBT (0.78)                           | A (0.57)                      | SBT (0.72)                           |
| Spratt & Urbandale Plaza     | Signalized      | A (0.23)                      | EBTR (0.23)                          | A (0.33)                      | NBL (0.33)                           |
| Limebank & Realigned Leitrim | Signalized      | D (0.88)                      | NBT (0.88)                           | A (0.59)                      | SBTR (0.59)                          |

The results of the intersection capacity analysis indicate that all study area intersections are expected to operate at an acceptable Level of Service (i.e. LOS 'E' or better) under Future (2031) Background Traffic conditions. It should be noted, however, that the Limebank & Leitrim intersection and the Limebank & Realigned Leitrim intersection have movements that are close to exceeding a v/c ratio of 0.90 and therefore any additional traffic could result in LOS 'E'.

### 5.7.2.3 Future (2031) Total Traffic

An intersection capacity analysis has been undertaken using the Future (2031) Total Traffic volumes presented previously in **Exhibit 8**.

The results of the intersection capacity analysis are summarized below.

Table 20 - Intersection Capacity Analysis: Future (2031) Total Traffic

| INTERSECTION                 | TRAFFIC CONTROL         | AM PEAK HOUR                  |                                      | PM PEAK HOUR                  |                                      |
|------------------------------|-------------------------|-------------------------------|--------------------------------------|-------------------------------|--------------------------------------|
|                              |                         | OVERALL LOS<br>(V/C OR DELAY) | CRITICAL MOVEMENTS<br>(V/C OR DELAY) | OVERALL LOS<br>(V/C OR DELAY) | CRITICAL MOVEMENTS<br>(V/C OR DELAY) |
| Limebank & Leitrim           | Signalized              | E (0.92)                      | NBT (0.93)                           | C (0.77)                      | WBL (0.86)                           |
|                              | Signalized <sup>1</sup> | D (0.90)                      | WBL (0.91)                           | C (0.71)                      | WBL (0.86)                           |
| Limebank & Spratt            | Signalized              | C (0.75)                      | EBL (0.79)                           | B (0.64)                      | SBT (0.77)                           |
|                              | Signalized <sup>1</sup> | C (0.77)                      | EBL (0.89)                           | A (0.58)                      | EBL (0.67)                           |
| Spratt & Urbandale Plaza     | Signalized              | A (0.23)                      | EBTR (0.23)                          | A (0.17)                      | NBL (0.39)                           |
| Limebank & Realigned Leitrim | Signalized              | E (0.94)                      | NBT (0.94)                           | E (0.99)                      | EBL (1.16)                           |
|                              | Signalized <sup>2</sup> | E (0.94)                      | NBT (0.94)                           | E (0.96)                      | SBTR (0.96)                          |
|                              | Signalized <sup>3</sup> | D (0.84)                      | NBT (0.84)                           | D (0.84)                      | EBTR (0.90)                          |

Notes:

<sup>1</sup> – Change from uncoordinated to coordinated traffic signals.

<sup>2</sup> – Dual eastbound left-turn auxiliary lanes.

<sup>3</sup> – Change from uncoordinated to coordinated traffic signals with dual eastbound left-turn auxiliary lanes.

Based on the intersection capacity analysis results shown above, both the Limebank & Leitrim intersection and the Limebank & Realigned Leitrim intersection are expected to approach their theoretical capacity under their existing/planned configuration.

The planned configuration for the Limebank & Realigned Leitrim intersection includes only a single eastbound left-turn lane initially, however, the design provisions for the eventual addition of a second eastbound left-turn lane. Given the volume of left-turn traffic projected, dual eastbound left-turn lanes will be required to accommodate site-generated traffic.

The intersections along Limebank Road are also currently uncoordinated and operate independently from each other. It is recommended that the three intersection be coordinated to ensure a smooth progression of traffic from intersection to intersection. The result of the intersection capacity analysis suggests that if the intersections are coordinated then all study area intersection will be able to operate at an acceptable Level of Service (i.e. LOS 'D' or better) under Future (2031) Total Traffic conditions.

### 5.7.3 Intersection Design (MMLOS)

Analysis of conditions for each mode has been conducted based on the methodology prescribed in the 2017 Multi-Modal Level of Service Guidelines and subsequent Addendum. The Level of Service for each mode has been calculated for each intersection where signals exist.

The Future (2031) Total Traffic intersection MMLOS results have been summarized in **Table 21** below. Detailed analysis results are provided in **Appendix H**.

Table 21 - Intersection-based MMLOS Results

| LOCATION                                 | LEVEL OF SERVICE BY MODE |                         |                                  |                  |
|------------------------------------------|--------------------------|-------------------------|----------------------------------|------------------|
|                                          | PEDESTRIAN<br>(PLOS)     | BICYCLE<br>(BLOS)       | TRANSIT<br>(TLOS)                | TRUCK<br>(TkLOS) |
| Leitrim & Limebank<br>(Existing)         | <b>F</b><br>(Target: C)  | <b>F</b><br>(Target: C) | F<br>(Target: N/A <sup>1</sup> ) | A<br>(Target: D) |
| Realigned Leitrim &<br>Limebank (Future) | <b>F</b><br>(Target: C)  | A<br>(Target: C)        | F<br>(Target: N/A <sup>1</sup> ) | B<br>(Target: D) |
| Limebank & Spratt<br>(Existing)          | <b>F</b><br>(Target: C)  | <b>F</b><br>(Target: B) | E<br>(Target: N/A <sup>1</sup> ) | N/A <sup>2</sup> |
| Spratt & Urbandale<br>Plaza (Existing)   | <b>F</b><br>(Target: C)  | <b>F</b><br>(Target: B) | B<br>(Target: N/A <sup>1</sup> ) | N/A <sup>2</sup> |
| Spratt & Urbandale<br>Plaza (Future)     | <b>F</b><br>(Target: C)  | <b>F</b><br>(Target: B) | B<br>(Target: N/A <sup>1</sup> ) | N/A <sup>2</sup> |

Notes:

<sup>1</sup> – There are no TLOS targets for roadways that are not part of the rapid transit or transit priority network.

<sup>2</sup> – Leitrim Road and Limebank Road are identified as truck routes but none of the local/collector roads are truck routes. As TkLOS is only evaluated for right-turn movements that will be used by trucks, the TkLOS target does not apply for these locations.

#### 5.7.3.1 Summary of Potential Improvements

Based on the MMLOS results outlined in **Table 21** above, the following measures have been identified which could improve conditions for each travel mode:

##### Pedestrians

The PLOS at intersections is based on several factors including the crossing distance, corner radii, and whether the crossing allows for permissive or protective right or left turns, among others. The City of Ottawa target for PLOS in Employment Areas and the General Urban Area is 'C'.

The results of the analysis indicate that all intersections are currently at PLOS 'F'. Given the distances that pedestrians must cross, it is not expected that the PLOS can be improved, however, consideration should be given to implementing leading pedestrian intervals (LPIs) and high-visibility crosswalk markings where warranted by pedestrian volumes. Although these measures won't be sufficient to improve the PLOS, they will represent improvements to pedestrian safety and comfort.

##### Cyclists

The BLOS at intersections is dependent on several factors: the number of lanes that the cyclist is required to cross to make a left-turn; the presence of a dedicated right-turn lane on the approach; and the operating speed of each approach. The City target for BLOS on Spine Routes is 'C' and for Local Routes it is 'B'.

The results of the analysis indicate that the current and planned cycling facilities result in a BLOS of 'F' at all study area intersections except for the future Limebank & Realigned Leitrim intersection. This is primarily due to the number of lanes that must be crossed to make left-turns as well as the introduction of right-turn lanes to the right of the bike lanes. Achieving the BLOS target at the study area intersections would require reconstruction of the intersections to a protected intersection configuration. It is assumed the Limebank & Realigned Leitrim intersection will be designed as a protected intersection, ultimately, based on the functional design presented in the EA.

#### Transit

None of the study area intersections are within the Rapid Transit or Transit Priority networks.

#### Trucks

Both Leitrim Road and Limebank Road are designed truck routes, however, none of the other roadways within the study area are truck routes. TkLOS is only applicable to right-turn movements used by trucks therefore the only intersections for which TkLOS analysis is required is the existing Limebank & Leitrim intersection and the future realigned Limebank & Leitrim intersection. Based on the turning radii and number of receiving lanes available, the TkLOS target is met at both of these intersections.

The recommended measures listed above are intended only as suggestions to the City on how the MMLOS within the study area could be improved and do not identify measures to be implemented as a direct consequence of this development. The remediation measures described above would improve mobility and comfort for all travel modes but are not required to accommodate the proposed development.

## 5.8 Geometric Review

The following section provides a review of all geometric requirements for the study area intersections.

### 5.8.1 Sight Distance

Limebank Road has an assumed design speed of 90km/h (posted speed limit plus 10km/h), therefore based on the TAC Geometric Design Guide for Canadian Roads, the minimum intersection sight distance required to permit right-turns-on-red for tractor-trailers (WB 19s and WB 20s) at the Limebank & Realigned Leitrim intersection is 265m. For Spratt Road, the assumed design speed is 70 km/h and therefore the minimum intersection sight distance required to permit right-turns on red for passenger vehicles is 130m. Given that the site access on Spratt Road will provide access to residential land uses only, there is no need to ensure that tractor-trailers can be accommodated.

Based on a desktop review of sightlines, sufficient sight distance is available at both intersections to permit right-turns-on-red.

### 5.8.2 Auxiliary Lane Analysis

Auxiliary turning lane requirements for all intersections within the study area are described below. The minimum storage requirements do not include deceleration or taper length requirements.

#### **5.8.2.1 Auxiliary Left-Turn Lane Requirements (Signalized Intersections)**

A review of auxiliary left-turn lane storage requirements was completed under Future (2031) Total Traffic conditions, comparing the highest queue lengths on each intersection approach under weekday morning and afternoon peak hours. The review compared the projected 95th percentile

queue lengths from Synchro operational results, and the standard queue length calculation based on the following equation:

$$\text{Storage Length} = \frac{NL}{C} \times 1.5$$

Where:

$N$  = number of vehicles per hour

$L$  = Length occupied by a vehicle in the queue = 7 m

$C$  = number of traffic signal cycles per hour

The results of the auxiliary left-turn lane analysis are summarized below in **Table 22** below.

Table 22 - Auxiliary Left-Turn Storage Analysis at Signalized Intersections

| INTERSECTION                 | APPROACH | MAXIMUM<br>95TH %ILE<br>QUEUE<br>LENGTH<br>(m) | MAXIMUM<br>CALCULATED<br>QUEUE<br>LENGTH (m) | EXISTING/<br>PLANNED<br>PARALLEL<br>LENGTH (m) | STORAGE<br>DEFICIENCY (m) |
|------------------------------|----------|------------------------------------------------|----------------------------------------------|------------------------------------------------|---------------------------|
| Limebank & Leitrim           | NB       | m5                                             | 5                                            | 195                                            | -                         |
|                              | SB       | #60                                            | 60                                           | 210                                            | -                         |
|                              | EB       | 5                                              | 5                                            | 130                                            | -                         |
|                              | WB       | #95                                            | 110                                          | 120                                            | -                         |
| Limebank & Spratt            | NB       | 20                                             | 15                                           | 205                                            | -                         |
|                              | SB       | 25                                             | 20                                           | 255                                            | -                         |
|                              | EB       | #100                                           | 115                                          | 100                                            | - <sup>1</sup>            |
|                              | WB       | 25                                             | 25                                           | 95                                             | -                         |
| Spratt & Urbandale Plaza     | NB       | 20                                             | 15                                           | -                                              | -                         |
|                              | EB       | 5                                              | 5                                            | -                                              | 15                        |
|                              | WB       | 5                                              | 10                                           | -                                              | -                         |
| Limebank & Realigned Leitrim | NB       | m25                                            | 105                                          | 90                                             | 15                        |
|                              | SB       | m25                                            | 45                                           | 90                                             | -                         |
|                              | EB       | #80                                            | 70                                           | 90                                             | -                         |
|                              | WB       | 15                                             | 10                                           | 125                                            | -                         |

Notes:

<sup>1</sup> – There is no space to extend the auxiliary left-turn lane due to the nearby adjacent Spratt & Urbandale Plaza intersection.

Based on the results above, an eastbound auxiliary left-turn lane with at least 15m of storage is recommended at the Spratt & Urbandale Plaza intersection. Although only 5m of storage is required, 15m is typically the recommended minimum length.

The results also indicate that at the Limebank & Realigned Leitrim intersection, the northbound left-turn auxiliary lane should be constructed with at least 105m of storage rather than the 90m of storage indicated in the EA Functional Design.

Note: The above storage lengths shall be considered at the design stage for these intersections. The values presented do not give consideration to deceleration or taper requirements.

### 5.8.2.2 Auxiliary Right-Turn Lane Requirements (Signalized Intersections)

Section 9.14 of TAC suggests that auxiliary right-turn lanes shall be considered when more than 10% of vehicles on an approach are turning right and when the peak hour demand exceeds 60 vehicles. The purpose of this guideline is to mitigate operational impacts to through-traffic, particularly on high-speed arterial roadways, and may not be applicable in all circumstances. The highest of the weekday morning and afternoon peak hour volumes under Future (2031) Total Traffic conditions were considered in this evaluation. Auxiliary right-turn lane warrants were not evaluated for movements with existing right-turn lanes.

The results of the auxiliary right-turn lane analysis are summarized in **Table 23** below.

Table 23 – Auxiliary Right-Turn Lane Storage Analysis at Signalized Intersections

| INTERSECTION                       | APPROACH | MAXIMUM<br>RIGHT TURN<br>VOLUME | MAXIMUM<br>PERCENTAGE OF<br>VEHICLES TURNING<br>RIGHT (%) | CONSIDERATION |
|------------------------------------|----------|---------------------------------|-----------------------------------------------------------|---------------|
| Spratt &<br>Urbandale<br>Plaza     | NB       | 3                               | 21%                                                       | No            |
|                                    | SB       | 2                               | 20%                                                       | No            |
|                                    | EB       | 30                              | 11%                                                       | No            |
|                                    | WB       | 6                               | 1%                                                        | No            |
| Limebank &<br>Realigned<br>Leitrim | NB       | 0                               | 0%                                                        | No            |
|                                    | SB       | 373                             | 37%                                                       | Yes           |
|                                    | EB       | 239                             | 43%                                                       | Yes           |
|                                    | WB       | 8                               | 25%                                                       | No            |

*Note: The above storage lengths shall be considered at the design stage for these intersections. The values presented do not give consideration to deceleration or taper requirements.*

The results of the auxiliary right-turn lane analysis indicate that an eastbound and southbound right-turn lane is warranted at the future Limebank & Realigned Leitrim intersection. Sensitivity analysis indicates that if auxiliary right-turn lanes were provided, the maximum 95<sup>th</sup> percentile queue would be 45.5m and 31.4m, respectively. It is therefore recommended that an eastbound and southbound right-turn lane with at least 50m and 35m of storage, respectively, be provided when the intersection is constructed.

*Note: The above storage lengths shall be considered at the design stage for these intersections. The values presented do not give consideration to deceleration or taper requirements.*

## 5.9 Summary of Recommended Improvements

Based on the results of the intersection capacity analysis, the following modifications are recommended:

- **Limebank Road & Leitrim Road:** Coordinate signal timing along Limebank Road.
- **Limebank Road & Realigned Leitrim Road:** Incorporate dual eastbound left-turn lanes, 105m of storage for the northbound left-turn lane, 50m of storage for the eastbound right-

turn lane and 35m of storage for the southbound right-turn lane into the design indicated in the ESR, and coordinate signal timing along Limebank Road.

- **Limebank Road & Spratt Road:** Coordinate signal timing along Limebank Road.
- **Spratt Road & Urbandale Plaza:** Include 15m of storage for the eastbound left-turn lane.

The MMLOS analysis also suggested that leading pedestrian intervals (LPIs) and high-visibility crosswalks be implemented at all signalized intersections but should be further evaluated by the City based on future pedestrian volumes. In the long-term, it is recommended that the City consider reconstruction of the study area intersections as protected intersections in order to improve safety and comfort for cyclists, and that cycle tracks be provided on both sides of Limebank Road. These future modifications are recommended to address the existing MMLOS deficiencies that are primarily a result of intersection size and are not triggered by or required to accommodate the proposed development.

## 6 Conclusion

The industrial/employment portion of the proposed Riverside South Employment Lands are expected to generate up to 1,008 and 936 two-way person trips during the weekday morning and afternoon peak hours, respectively, while the residential portion is expected to generate up to 25 and 27 two-way person trips. These person-trips were assigned mode share targets consistent with the South Gloucester/Leitrim Traffic Assessment Zone (TAZ) in the 2020 TRANS Trip Generation Manual Summary Report and adjusted to reflect the transit and active transportation mode share targets outlined in the Draft Riverside South CDP Transportation Update and 2013 TMP. These person-trips were subsequently distributed and assigned to the adjacent roadway network based on the 2011 O-D Survey.

The resulting two-way vehicle trip generation is, therefore 756 and 702 two-way vehicle-trips during the weekday morning and afternoon peak hours, respectively, for the industrial/employment portion of the site, and 11 and 12 two-way vehicle-trips, respectively, for the residential portion of the site.

Site-generated traffic will access the public roadway network via a new signalized intersection along the future re-alignment of Leitrim Road and via a new private approach at the signalized Spratt & Urbandale Plaza intersection.

As indicated by the analysis conducted for this study, some capacity issues are anticipated under Future (2031) Total Traffic conditions. To mitigate these capacity issues, it is recommended that the intersections along Limebank Road be coordinated to ensure a smooth progression of traffic along the corridor.

The following modifications to the design of the Limebank & Realigned Leitrim intersection are also recommended based on the results of the intersection capacity analysis and auxiliary lane analysis:

- Implement dual eastbound left-turn lanes. These have already been provisioned for in the intersection design from the ESR, however, the design assumed that only a single left-turn lane would be required initially.
- Provide 105m of storage (minimum) for the northbound left-turn lane rather than the 90m currently planned.
- Provide an eastbound and southbound right-turn lane with at least 50m and 35m of storage, respectively.

An eastbound left-turn lane with 15m of storage (minimum) is also recommended at the Spratt & Urbandale Plaza intersection.

It should be noted that the above storage lane recommendations do not include deceleration and taper requirements.

Multi-Modal Level of Service analysis was conducted for the roadway segments and signalized intersections within the study area. Based on the results of the analysis, it is recommended that the City consider implementing the following measures:

- **Short-Term:** Consider implementing leading pedestrian intervals (LPIs) and high-visibility crosswalk markings at all signalized intersections in the study area, based on pedestrian volumes; and
- **Long-Term:** Consider implementing a protected intersection design at all signalized intersections, providing cycle tracks on both sides of the study area roadways and providing sidewalks and cycle tracks along the realigned Leitrim Road if widened and urbanized in the future.

It should be noted that the above recommendations would improve mobility and comfort for all travel modes but are not required to accommodate the proposed development. Level of Service for cyclists and pedestrians is largely dictated by the size of an intersection and therefore mitigation measures are often limited in these circumstances. The proposed measures are recommended in order to address existing deficiencies and not as a direct consequence of the proposed development.

It is also recommended that new transit stops be provided along the realigned Leitrim Road at the Limebank Road intersection, at the Street #2 intersection and the westernmost intersection with Street #1 in order to ensure adequate transit coverage for the site upon full build-out.

All intersections were shown to operate well under their theoretical capacities within the timeframe of this study with the recommended mitigation measures. A post-development monitoring plan is therefore not a requirement of this study. The functional design of the access intersections on Spratt Road and on Limebank Road will require further discussion with the City and therefore are not included in this TIA.

**Based on the findings of this study, it is the overall opinion of IBI Group that the proposed development will integrate well with and can be safely accommodated by the adjacent transportation network.**

## Appendix A – City Circulation Comments

## MEMO / NOTE DE SERVICE



To / Destinataire      File      File/N° de fichier:  
                                 **Final** Meeting Notes – April 7, 2015      PC 2014-0201  
                                      Part of 3700 Twin Falls Place  
                                      Now 4020 Spratt Road

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From / Expéditeur      Cathlyn Kaufman      Date: April 29, 2015  
                                 Development Review – Suburban - Southeast  
                                 Planning and Growth Management

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Subject:      Pre-consultation Meeting –  
                         For Subdivision and Zoning Application  
Where:      City Hall, 110 Laurier Avenue, Meeting Room 4102  
Date:      April 7, 2015  
Time:      10:30 am to 12:00 pm

### Those in attendance:

City:      Cathlyn Kaufman, File Lead Planner  
                 Jacek Taracha, Senior Engineer,  
                 Asad Yousfani, Project Manager, Transportation  
                 Don Morse, Planner III, Urban Design  
                 Matthew Hayley, Planner II, Environment

Applicant:      Mary Jarvis, RSDC  
                         Lucie Dalrymple, J.L. Richards and Associates (Engineering)  
                         Curtiss Scarlett, J.L. Richards and Associates (Engineering)  
                         Lee Jablonski, J.L. Richards and Associates (Transportation)  
                         Katie Morphet, J.L. Richards and Associates (Planning)  
                         Tim Chadder, J.L. Richards and Associates (Planning)  
                         Alex Zeller, Dillon Consulting  
                         Erin Wilson, Golder Associates  
                         David Gilbert, Parterson Group

Regards: Gord Elliott, Project Manager, Infrastructure, Jennifer Hemmings, Parks Planner,  
                 Jocelyn Chandler, RVCA: Martha Copestake, Forestry Planner;

### Further Comments received from :

1. Municipal Addressing, April 20, 2015 (provided on Page 4)
2. Jocelyn Chandler, April 10, 2015 (Attached on Page 4)
3. Gord Elliott, April 29, 2015 (provided on Page 5)

The detailed 'Applicant's Study and Plan Identification List' will be provided as a separate document.

**Purpose:**

A pre-application consultation meeting for Subdivision and Zoning applications for under 50 unit plan of subdivision known as Riverside South – Phase 16. The number of units is to be confirmed.

**Location Summary Details:**

The parcel, referenced as part of 3700 Twin Falls Place, will be re-addressed to have a Spratt Road address. This parcel is part of a large landholding which is bisected by Mosquito Creek and a small ravine. The area being proposed to be developed is 2.72 hectares on the north side of Spratt Road, south side of Mosquito Creek and approximately 200 metres west of Limebank Road.

Note: At the meeting it was determined that the parcel to the east of this site located in the north west quadrant of the intersection of Limebank Road and Spratt Road will be developed in the future through the following possible planning applications : severance, site plan and zoning.

**Items discussed in an Open Forum**

1. Proposed Development is based on Pre-application consultation dated September 2014 and draft subdivision concept plan received by the City in March 2015.  
Number of Townhouses: under 50 units? To be confirmed  
Ravine Setback Block – 15 metre top of bank/slope or limit of hazard lands whichever is the greater.  
Valley Lands of Mosquito Creek and the small ravine to the east are outside of the subdivision.
2. Engineering points raised:
  - it is recognized that the stormwater (SW) from this subdivision will drain to Mosquito Creek via a storm sceptor at a location that will be determined.
  - the outfall of the municipally owned storm sceptor which is outside of the subdivision will be shown as a block on the Draft 4M-plan and set out in a Draft Condition.
  - there much discussion around if watermain looping would be required and this is to be determined once the number of units is confirmed. If the total number of units is 50 or more that watermain will have to be looped.
  - since the Master Servicing Study contemplated that this parcel and the parcel to the east would be developed together there was further consideration given to how the service the parcels separately.
  - it was noted that the water main in the north section of Limebank Road is not live.
  - Jacek to confirm the watermain connection to the existing 350 mm dia HDPE pipe in Spratt Road.
  - Spratt Road will have to be ripped up to allow connection to sanitary sewer and the watermain.
  - The issue of stormwater management storage requirements and what to design to is to be.

It is confirmed, after, the meeting, that the original 50m<sup>3</sup>/ha sag storage is OK providing that the 0.30 allowed ponding depth and the inlet capacity of 94 l/s/ha is maintained.

After conversation with RVCA on April 16, 2015, there will be a requirement that the existing Spratt Road storm sewer to be redirected via the subdivision to the proposed oil and grit separator (sceptor unit).
3. Geotechnical discussion
  - the limit of development will be determined and best location for the storm sceptor have to be further examined as to the possible 'best' recommended location given slope issues and possible environmental constraints such as significant trees
4. RVCA – both the limit of development, storm sceptor location and outfall design will be subject to RVCA review and possible permits as determined.

## 5. Transportation Discussion

- due to the size of this subdivision and the fact that there is an existing intersection with traffic signals that will be used to access this subdivision, a Traffic Memo was requested.
- it was noted that the proposed public street within the subdivision is to align with the existing intersection.
- after Draft Plan approval and before subdivision registration, there will be a requirement for Road Modification Design at 80% complete to be submitted and approved.
- Cul-de-sac design was reviewed. 18 m radius with 16.50 m Right-of-way. Pavement width would be 8.5 metres of asphalt with 4 metres of boulevard on each side. This would allow a 14 metre radius of asphalt in the cul-de-sac which is what the Fire Department and City Operations requires for turning the large vehicles.

## 6. Park Dedication Requirement

- will be based on the units proposed and will be tracked through a condition of subdivision registration of the accumulation of parkland for a District Park.
- An approved Riverside South modified Area Park Plan (mAPP) will required to be in place prior to the registration of the subdivision.

## 7. Urban Design Comments:

- the proposed layout is similar to the existing Riverside South (RS) CDP and this area of Riverside South will probably be minimally impacted by the updated that is being done for the RS CDP.
- design of units will be to the internal public street but noise walls should be avoided.
- consider the unique location of the site as it is surrounded by ravine lands and the Mosquito Creek valley land. Design should be keep open with minimal fencing requirements where possible.
- the area is shown as low density but medium density could be considered for this parcel.
- the site layout will be refined as the lotting layout was not totally being accessed via the internal public road.

## 8. Environmental Matters:

- An Environment Impact Statement is required to look at the following items and this is not an all inclusive list as there may be other item found once the seasonal studies are completed:
  - should consider significant valley lands and woodlands.
  - species at risk (Endangered and Threatened Species)
  - woods – distinctive trees
- there was some questions about the proposed subdivision design and it was recognized that the subdivision layout will be refined.
- the EIS will need to include a discussion of where the stormwater outlet can/will be located from an environmental prespective.
- Tree Conservation Report required.

## 9. Archaeological Resource Assessment

- Mosquito Creek considered an important waterway.  
Therefore for property within 300 metres of waterway and 100 metres of important overland route (Limebank Road) – an archaeological assessment is required.
- there has been some field work done.
- 3 copies required with Draft Plan application together with proof the Assessment has been submitted to Province.
- Study will probably include both Parcels as the properties are being assessed together.

## 10. Planning Process: Subdivision and Zoning can move forward at same time. It was noted that until the Limit of Development is clearly defined there may be a need to put the Zoning Application ‘On Hold’ until the development limit is accepted and approved.

### **Other Items:**

Note: As a follow-up to the meeting, the Riverside South CDP dated January 15, 2015 does show the subject parcel as medium density. If the planning application are submitted in advance of the Riverside South CDP update, this proposed medium density land use should be recognized.

### **Additional Information and Comments:**

#### **1. Municipal Addressing: (April 20, 2015)**

- Parcel 1 west of small green corridor on RS CDP – 4020 Spratt Road.
- Parcel 2 east of small green corridor on RS CDP – 4010 Spratt Road

#### **2. RVCA: Jocelyn Chandler (April 10, 2015)**

I have had a preliminary look at the proposed subdivision lands and draft meeting minutes and have the following comments on behalf of the RVCA:

1. The main stem of Mosquito Creek R-3 which is at the south-west boundary of the site will require site specific delineation of constraint lines as follows:
  - 30 m from NHWM
  - 15 from Top of slope
  - Geotechnical as per MNR & city of Ottawa Guidelines
  - Meanderbelt
2. Tributary 3 at the north-west boundary of the site will require site specific delineation of constraint lines as above. At one time there were proposed works related to erosion thresholds proposed along this reach. What is the status of these works (or proposed works). Might this change through completion of the MSS Update?
3. Tributary 3C/D as shown in red on the attached map appears to have been considered during the fisheries assessment and DFO work. It was expected to be filled and was accounted for in the compensation calculations (to be confirmed). It is our understanding that because this work was already reviewed and approved under the Fisheries Act, no other fisheries assessment under DFO will be required.
4. If Trib 3C/D is to be filled, a permit to alter (fill/close) this watercourse will be required under O.Reg 174/06, and any upstream drainage accounted for.
5. Based on above the north-east boundary will require rational (will Trib C/D be retained?... therefore setbacks required or will it be closed and the lot line with the adjacent future development to be established.
6. It is our understanding that stormwater will be collected and outletted to Mosquito Creek directly. Quality controls must be 80% TSS removal. Quantity as per thresholds identified in RSS MSS.
7. Location of these stormwater outlets must be discussed directly with RVCA watercourse regulations staff (Hal Stimson).
8. A permit under O.Reg 174/06 will be required prior to any works on the bed or banks of any watercourses.
9. We strongly advise that sediment curtains and orange construction fencing must be set up along the constraint boundaries adjacent the watercourses prior to undertaking any works on the site.

### 3. Infrastructure Comments: Gord Elliott (April 29, 2015)

Per our conversation yesterday I have the following additional comments that need further discussion with RSDC, I left a message with Mary Jarvis but as of today have not rec'd a return call.

1. RSDC should have further discussion with the City & RVCA on land development benefits of filling Tributary# 3D. Some of the benefits may include eliminating most of the set back requirements to the ravine, providing more developable land, provides opportunity for a "servicing corridor" and watermain looping to both blocks of land (currently isolated by the ravine), potential for one SWM treatment location + one outlet pipe to Mosquito creek and it may provide better access for both site (ie existing traffic lights @ plaza vs restricted rt in rt out).
2. I have rec'd confirmation from Chris Hamilton in Drinking Water Services Division (see separate e-mail) that the existing 350 HDPE pipe in Spratt Rd will remain in service and this project must connect to the 350 pipe in Spratt Rd.

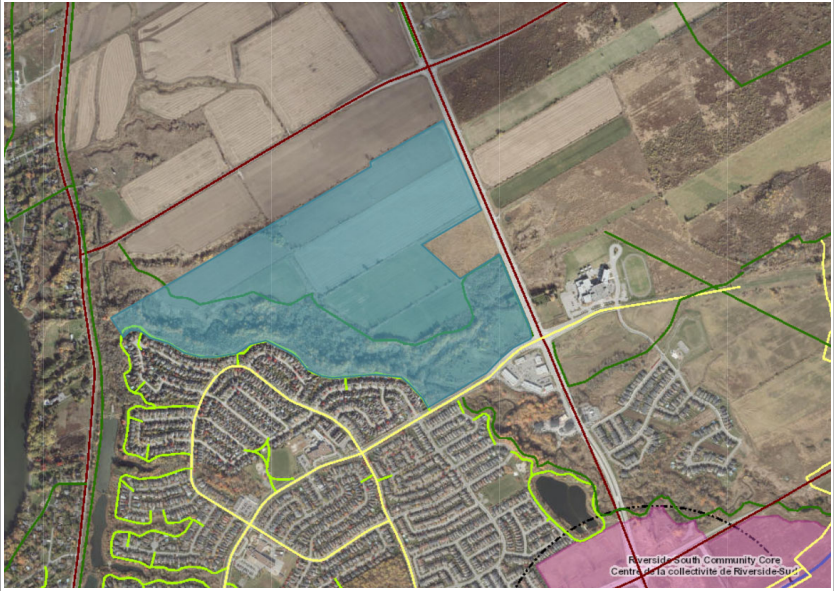
Further discussion on this matter with Mary and the consultants is suggested.

## Appendix B – Screening Form

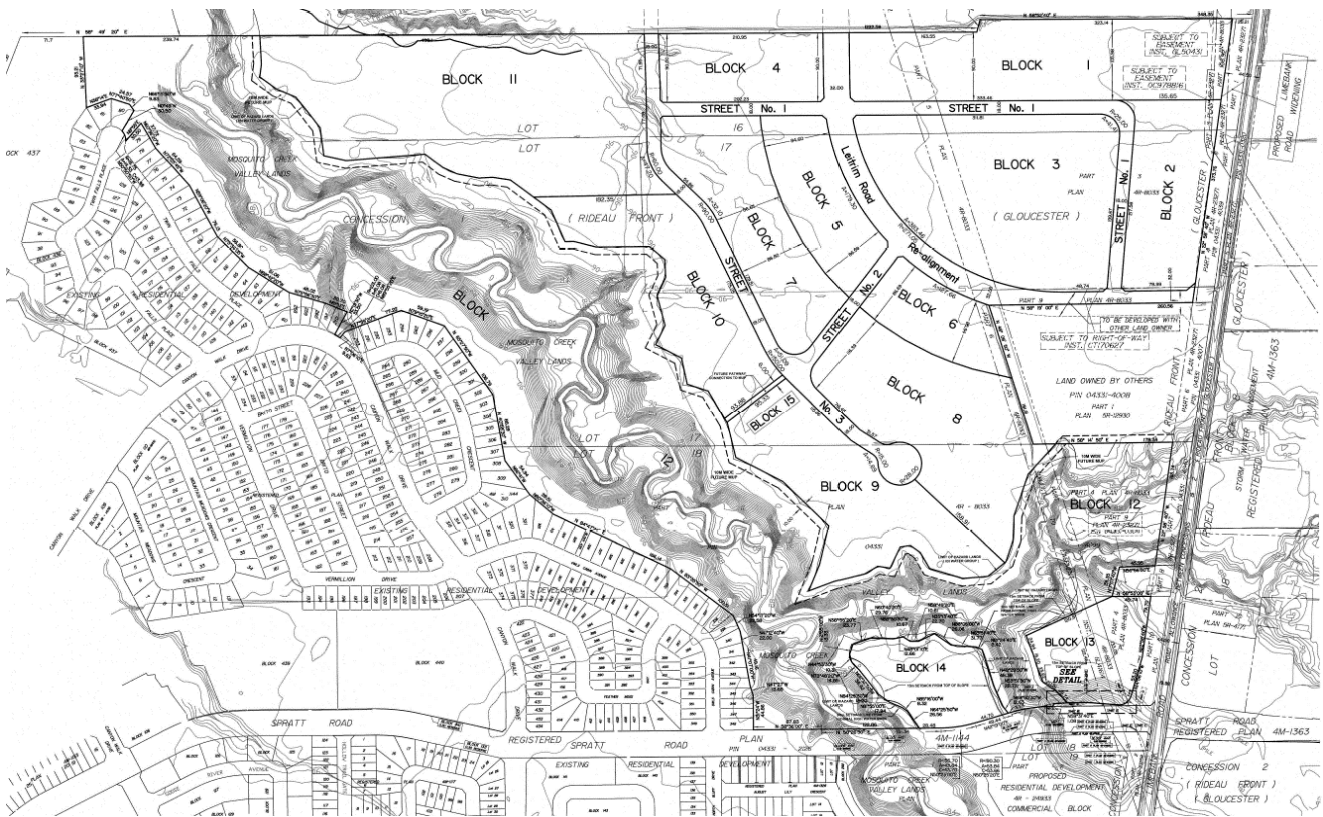
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## City of Ottawa 2017 TIA Guidelines Screening Form

### 1. Description of Proposed Development

|                                    |                                                                                                                                                     |
|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Municipal Address                  | 3700 Twin Falls Place                                                                                                                               |
| Description of Location            | West of Limebank Road, between Leitrim Road and Spratt Road.<br> |
| Land Use Classification            | Employment, institutional and residential                                                                                                           |
| Development Size (units)           | 38 townhouse units                                                                                                                                  |
| Development Size (m <sup>2</sup> ) | 42.3 hectares of employment lands and 1.6 hectares of land for a firehall                                                                           |
| Number of Accesses and Locations   | One (1) new signalized access on Limebank Road and a new approach at the signalized Spratt Road & Urbandale Plaza intersection.                     |
| Phase of Development               | One Phase                                                                                                                                           |
| Buildout Year                      | TBD                                                                                                                                                 |

If available, please attach a sketch of the development or site plan to this form.



## 2. Trip Gen Trigger

Considering the Development's Land Use Type and Size (as filled out in the previous section), please refer to the Trip Generation Trigger checks below.

| Land Use Type                       | Minimum Development Size |   |
|-------------------------------------|--------------------------|---|
| Single-family homes                 | 40 units                 |   |
| Townhomes or apartments             | 90 units                 |   |
| Office                              | 3,500 m <sup>2</sup>     |   |
| Industrial                          | 5,000 m <sup>2</sup>     | ✓ |
| Fast-food restaurant or coffee shop | 100 m <sup>2</sup>       |   |
| Destination Retail                  | 1,000 m <sup>2</sup>     |   |
| Gas Station or convenience market   | 75 m <sup>2</sup>        |   |

*\*If the development has a land use type other than what is presented in the table above, estimates of person trip generation may be made based on average trip generation characteristics represented in the current edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual.*

Based on the above, the Trip Generation Trigger is satisfied.

## 3. Location Triggers

|                                                                                                                                                                      | Yes | No |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|
| Does the development propose a new driveway to a boundary street that is designated as part of the City's Transit Priority, Rapid Transit or Spine Bicycle Networks? | ✓   |    |
| Is the development in a Design Priority Area (DPA) or Transit-oriented Development (TOD) zone?*                                                                      |     | ✓  |

*\*DPA and TOD are identified in the City of Ottawa Official Plan (DPA in Section 2.5.1 and Schedules A and B; TOD in Annex 6) See Chapter 4 for a list of City of Ottawa Planning and Engineering documents that support the completion of TIA.*

Based on the above, the Location Trigger is satisfied.

#### 4. Safety Triggers

|                                                                                                                                                                                                                          | Yes | No |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|
| Are posted speed limits on a boundary street 80km/hr or greater?                                                                                                                                                         | ✓   |    |
| Are there any horizontal/vertical curvatures on a boundary street that limit sight lines at a proposed driveway?                                                                                                         |     | ✓  |
| Is the proposed driveway within the area of influence of an adjacent traffic signal or roundabout (i.e. within 300 m of intersection in rural conditions, or within 150 m of intersection in urban/suburban conditions?) |     | ✓  |
| Is the proposed driveway within auxiliary lanes of an intersection?                                                                                                                                                      |     | ✓  |
| Does the proposed driveway make use of an existing median break that serves an existing site?                                                                                                                            |     | ✓  |
| Is there a documented history of traffic operations or safety concerns on the boundary streets within 500 m of the development?                                                                                          | ✓   |    |
| Does the development include a drive-thru facility?                                                                                                                                                                      |     | ✓  |

Based on the above, the Safety Trigger is satisfied.

#### 5. Summary

|                                                           | Yes | No |
|-----------------------------------------------------------|-----|----|
| Does the development satisfy the Trip Generation Trigger? | ✓   |    |
| Does the development satisfy the Location Trigger?        | ✓   |    |
| Does the development satisfy the Safety Trigger?          | ✓   |    |

Based on the results of the TIA Screening Form, the Trip Generation, Location and Safety Triggers are satisfied. As such, a TIA is required for the proposed development.

## Appendix C – OC Transpo Routes

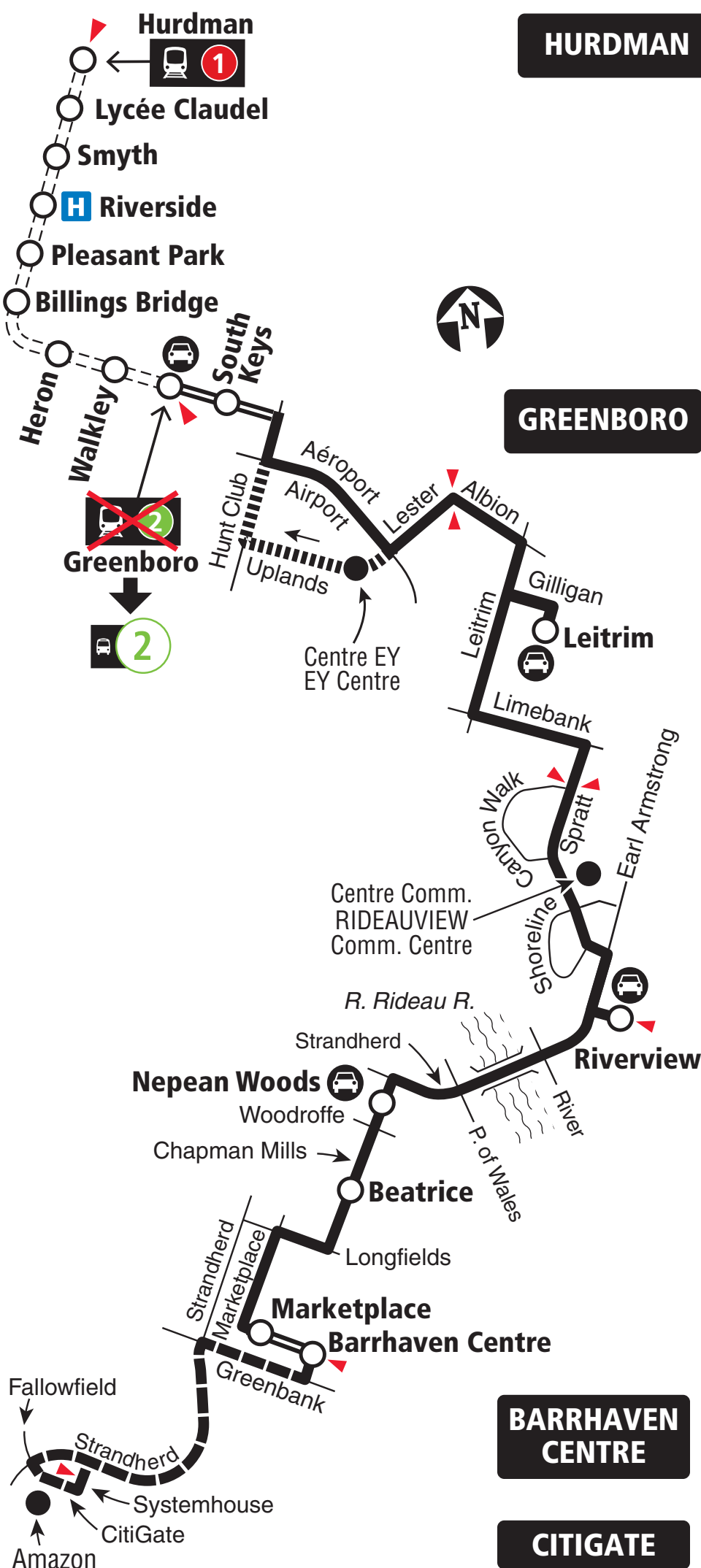
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# CITIGATE BARRHAVEN CENTRE HURDMAN GREENBORO

**Rapid®**

**7 days a week / 7 jours par semaine**



2021.09



**Schedule / Horaire ..... 613-560-1000**

**Text / Texto\* ..... 560560**

*plus your four digit bus stop number / plus votre numéro d'arrêt à quatre chiffres*

\*Standard message rates may apply / Les tarifs réguliers de messagerie texte peuvent s'appliquer

**Customer Service**

**Service à la clientèle ..... 613-560-5000**

**Lost and Found / Objets perdus ..... 613-563-4011**

**Security / Sécurité ..... 613-741-2478**

**Effective September 5, 2021**

**En vigueur 5 septembre 2021**



**INFO 613-560-5000**  
**octranspo.com**



# 299

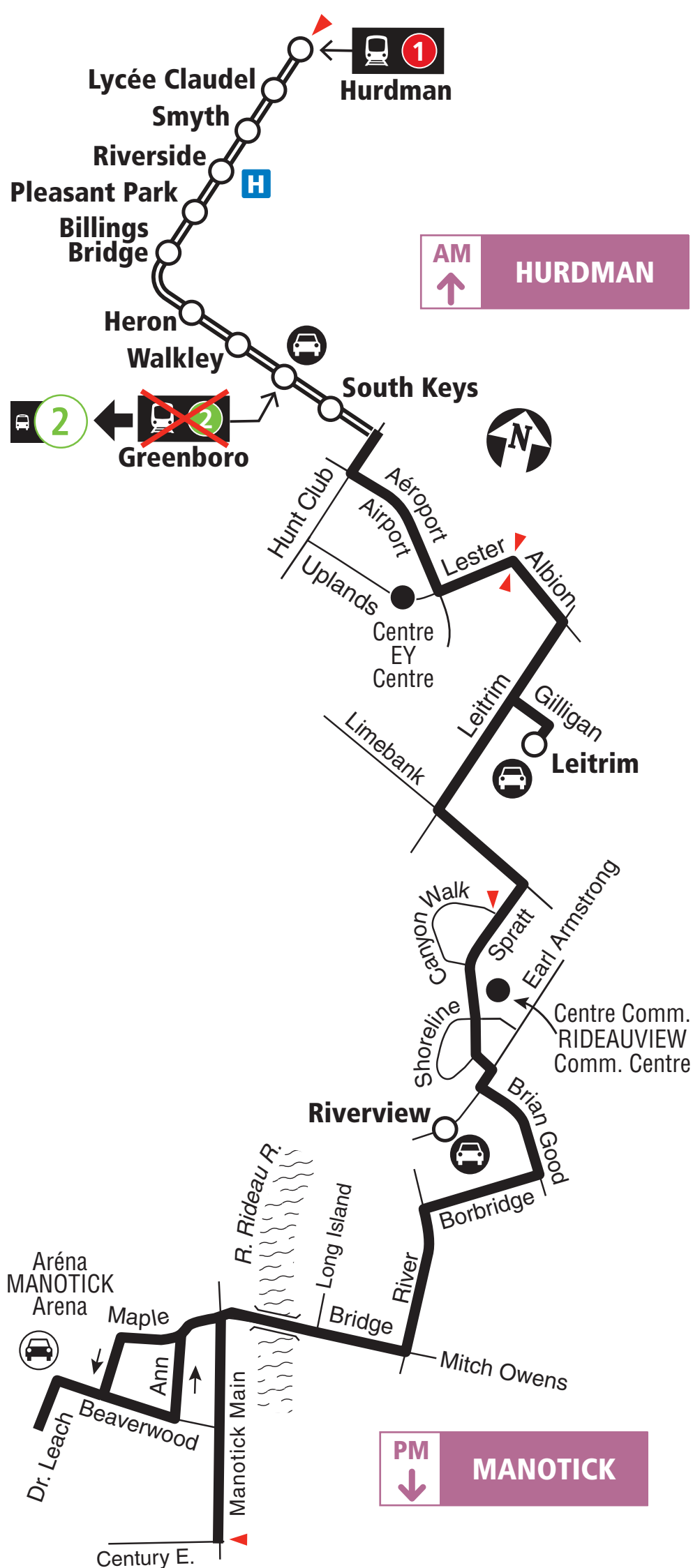
## MANOTICK HURDMAN

### Connexion

**Monday to Friday / Lundi au vendredi**

Peak periods only

Périodes de pointe seulement



2022.04



Transitway & Station



Park & Ride / Parc-o-bus



Timepoint / Heures de passage

2022.04



**Schedule / Horaire ..... 613-560-1000**

**Text / Texto\* ..... 560560**

plus your four digit bus stop number / plus votre numéro d'arrêt à quatre chiffres

\*Standard message rates may apply / Les tarifs réguliers de messagerie texte peuvent s'appliquer

Customer Service

Service à la clientèle ..... **613-560-5000**

Lost and Found / Objets perdus ..... **613-563-4011**

Security / Sécurité ..... **613-741-2478**

**Effective April 24, 2022**

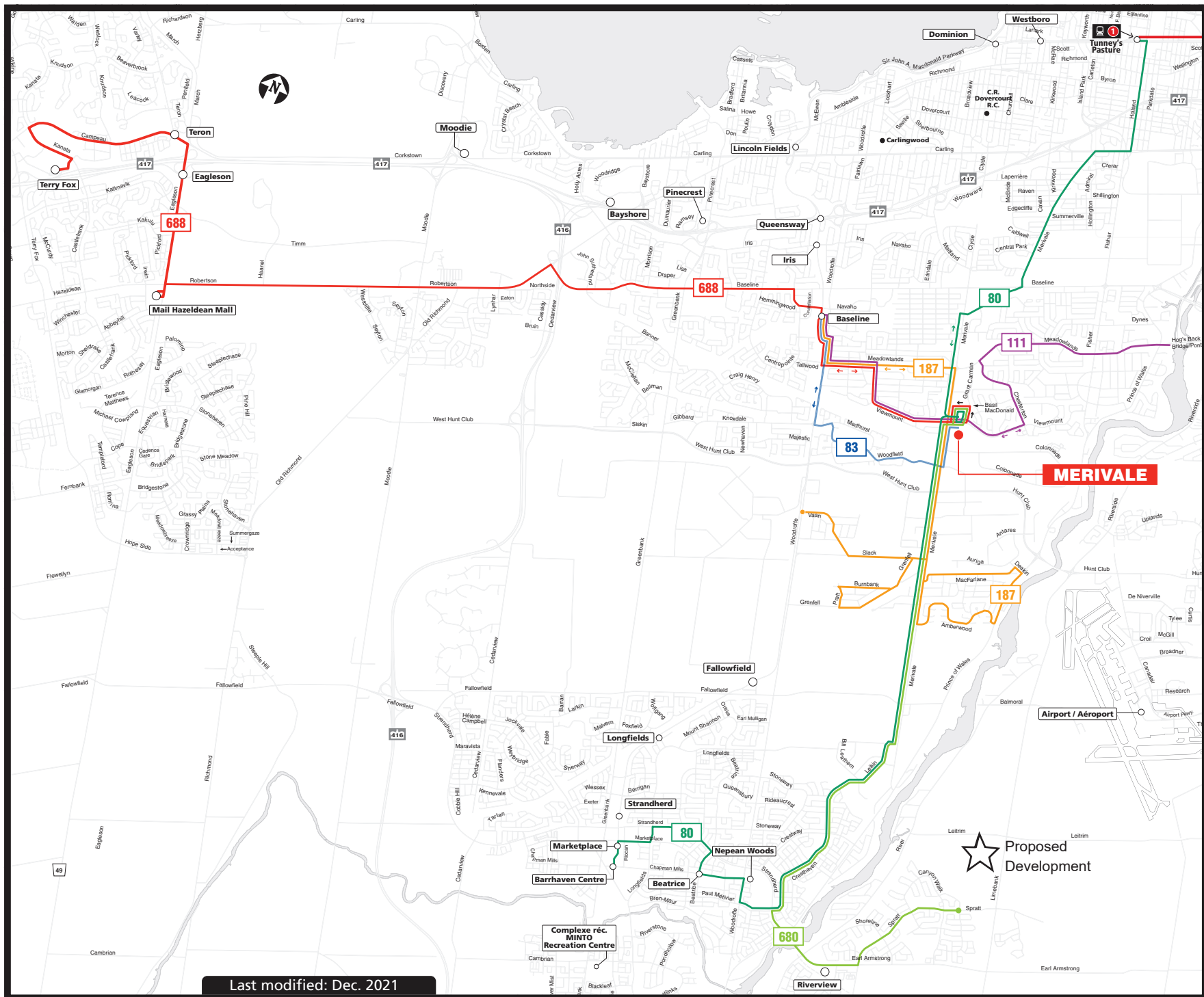
**En vigueur 24 avril 2022**



**Transpo**

**INFO 613-560-5000**

**octranspo.com**



## Appendix D – Collision Data

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# Transportation Services - Traffic Services

## Collision Details Report - Public Version

**From:** January 1, 2016 **To:** December 31, 2020

**Location:** LIMEBANK RD @ SPRATT RD

**Traffic Control:** Traffic signal

**Total Collisions:** 12

| Date/Day/Time          | Environment   | Impact Type | Classification   | Surface Cond'n | Veh. Dir | Vehicle Manoeuvre   | Vehicle type              | First Event         | No. Ped |
|------------------------|---------------|-------------|------------------|----------------|----------|---------------------|---------------------------|---------------------|---------|
| 2016-Feb-13, Sat,19:20 | Clear         | Angle       | P.D. only        | Wet            | East     | Turning left        | Automobile, station wagon | Other motor vehicle | 0       |
|                        |               |             |                  |                | North    | Going ahead         | Pick-up truck             | Other motor vehicle |         |
| 2016-Feb-25, Thu,23:23 | Drifting Snow | Rear end    | P.D. only        | Ice            | South    | Turning right       | Pick-up truck             | Other motor vehicle | 0       |
|                        |               |             |                  |                | South    | Turning right       | Pick-up truck             | Other motor vehicle |         |
| 2016-Oct-21, Fri,16:20 | Clear         | Rear end    | P.D. only        | Wet            | South    | Turning right       | Automobile, station wagon | Other motor vehicle | 0       |
|                        |               |             |                  |                | South    | Turning right       | Passenger van             | Other motor vehicle |         |
| 2017-Jun-21, Wed,15:45 | Clear         | Angle       | P.D. only        | Dry            | East     | Going ahead         | Pick-up truck             | Other motor vehicle | 0       |
|                        |               |             |                  |                | South    | Going ahead         | Automobile, station wagon | Other motor vehicle |         |
| 2018-Oct-18, Thu,17:36 | Clear         | Rear end    | P.D. only        | Dry            | East     | Changing lanes      | Automobile, station wagon | Other motor vehicle | 0       |
|                        |               |             |                  |                | East     | Going ahead         | Automobile, station wagon | Other motor vehicle |         |
| 2019-Feb-07, Thu,01:35 | Clear         | SMV other   | P.D. only        | Slush          | South    | Going ahead         | Automobile, station wagon | Curb                | 0       |
| 2019-Oct-16, Wed,07:40 | Clear         | Rear end    | Non-fatal injury | Dry            | North    | Turning right       | School bus                | Other motor vehicle | 0       |
|                        |               |             |                  |                | North    | Turning right       | School bus                | Other motor vehicle |         |
| 2020-Jan-16, Thu,13:15 | Clear         | Angle       | Non-fatal injury | Wet            | South    | Going ahead         | Truck - open              | Other motor vehicle | 0       |
|                        |               |             |                  |                | East     | Turning left        | Automobile, station wagon | Other motor vehicle |         |
| 2020-Sep-26, Sat,01:11 | Clear         | SMV other   | P.D. only        | Dry            | South    | Turning right       | Automobile, station wagon | Curb                | 0       |
| 2020-Oct-02, Fri,22:10 | Clear         | Rear end    | P.D. only        | Dry            | North    | Going ahead         | Automobile, station wagon | Other motor vehicle | 0       |
|                        |               |             |                  |                | North    | Slowing or stopping | Automobile, station wagon | Other motor vehicle |         |
| 2020-Dec-09, Wed,08:30 | Snow          | SMV other   | P.D. only        | Loose snow     | South    | Turning left        | Automobile, station wagon | Curb                | 0       |
| 2020-Dec-11, Fri,23:04 | Clear         | Rear end    | P.D. only        | Wet            | North    | Going ahead         | Automobile, station wagon | Other motor vehicle | 0       |
|                        |               |             |                  |                | North    | Slowing or stopping | Automobile, station wagon | Other motor vehicle |         |



# Transportation Services - Traffic Services

## Collision Details Report - Public Version

**From:** January 1, 2016 **To:** December 31, 2020

**Location:** LIMEBANK RD btwn LEITRIM RD & SPRATT RD

**Traffic Control:** No control

**Total Collisions:** 7

| Date/Day/Time          | Environment | Impact Type | Classification   | Surface Cond'n | Veh. Dir | Vehicle Manoeuver | Vehicle type              | First Event                | No. Ped |
|------------------------|-------------|-------------|------------------|----------------|----------|-------------------|---------------------------|----------------------------|---------|
| 2018-Jan-07, Sun,12:09 | Clear       | SMV other   | P.D. only        | Dry            | South    | Going ahead       | Automobile, station wagon | Pole (utility, power)      | 0       |
| 2018-Feb-04, Sun,03:37 | Snow        | SMV other   | P.D. only        | Loose snow     | North    | Going ahead       | Automobile, station wagon | Skidding/sliding           | 0       |
| 2018-Dec-16, Sun,02:30 | Clear       | Rear end    | P.D. only        | Dry            | North    | Going ahead       | Unknown                   | Other motor vehicle        | 0       |
|                        |             |             |                  |                | North    | Going ahead       | Automobile, station wagon | Other motor vehicle        |         |
| 2019-Feb-08, Fri,08:59 | Clear       | Other       | P.D. only        | Wet            | North    | Going ahead       | Automobile, station wagon | Debris falling off vehicle | 0       |
|                        |             |             |                  |                | South    | Going ahead       | Unknown                   | Other                      |         |
| 2019-Nov-22, Fri,18:36 | Clear       | SMV other   | P.D. only        | Dry            | South    | Going ahead       | Automobile, station wagon | Animal - wild              | 0       |
| 2020-Feb-06, Thu,23:08 | Snow        | SMV other   | Non-fatal injury | Loose snow     | South    | Going ahead       | Pick-up truck             | Curb                       | 0       |
| 2020-Feb-12, Wed,07:40 | Clear       | Rear end    | P.D. only        | Dry            | North    | Going ahead       | Automobile, station wagon | Other motor vehicle        | 0       |
|                        |             |             |                  |                | North    | Stopped           | Automobile, station wagon | Other motor vehicle        |         |



# Transportation Services - Traffic Services

## Collision Details Report - Public Version

**From:** January 1, 2016 **To:** December 31, 2020

**Location:** SPRATT RD btwn LIMEBANK RD & OWLS CABIN AVE

**Traffic Control:** No control

**Total Collisions:** 1

| Date/Day/Time           | Environment | Impact Type | Classification | Surface Cond'n | Veh. Dir | Vehicle Manoeuvre | Vehicle type              | First Event         | No. Ped |
|-------------------------|-------------|-------------|----------------|----------------|----------|-------------------|---------------------------|---------------------|---------|
| 2020-Dec-01, Tue, 15:59 | Clear       | Rear end    | P.D. only      | Dry            | East     | Changing lanes    | Automobile, station wagon | Other motor vehicle | 0       |
|                         |             |             |                |                | East     | Going ahead       | Automobile, station wagon | Other motor vehicle |         |

## Appendix E – Traffic Data

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## Turning Movement Count - Peak Hour Diagram

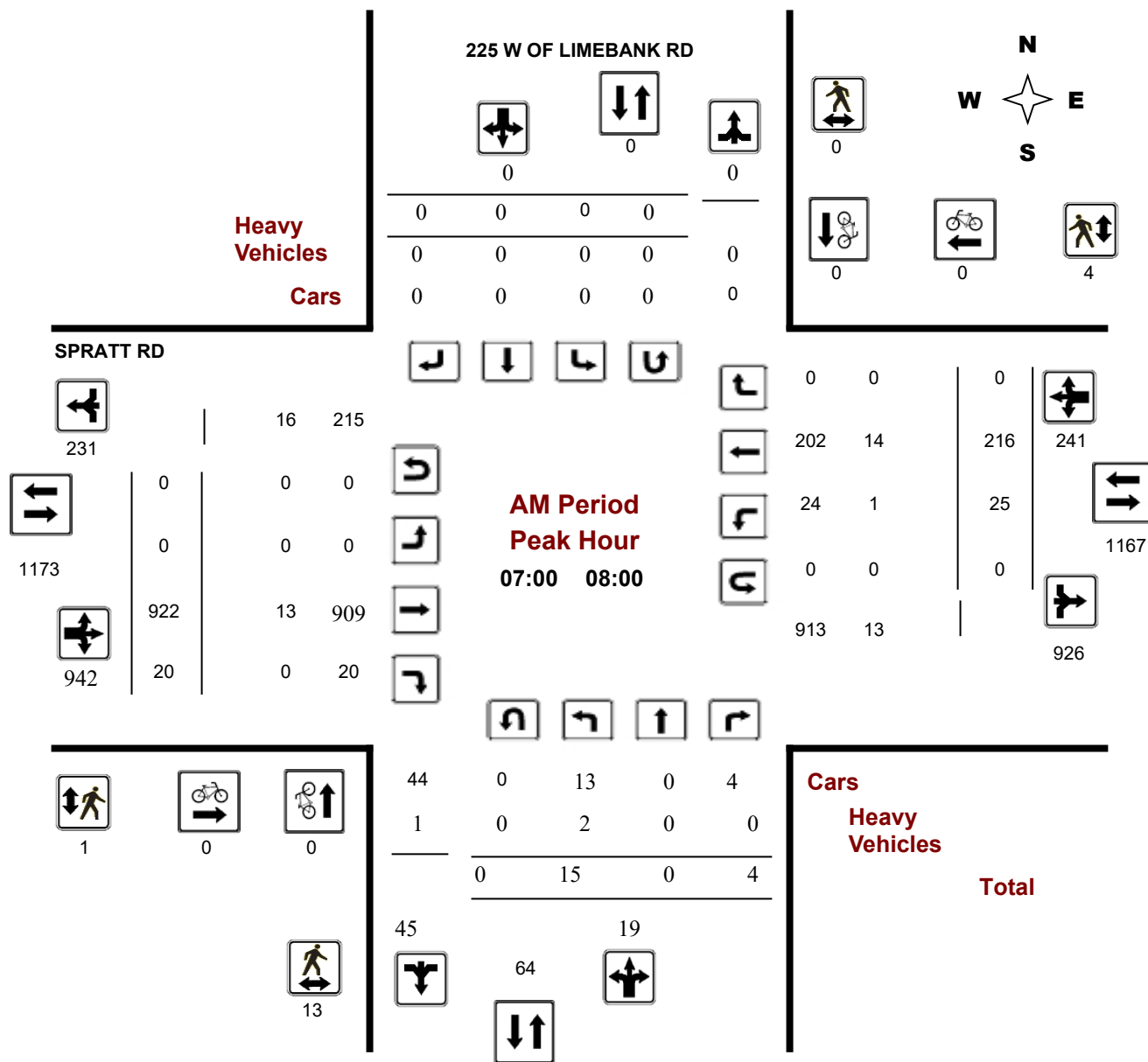
### 225 W OF LIMEBANK RD @ SPRATT RD

**Survey Date:** Wednesday, November 21, 2018

**Start Time:** 07:00

**WO No:** 38151

**Device:** Miovision



## Turning Movement Count - Peak Hour Diagram

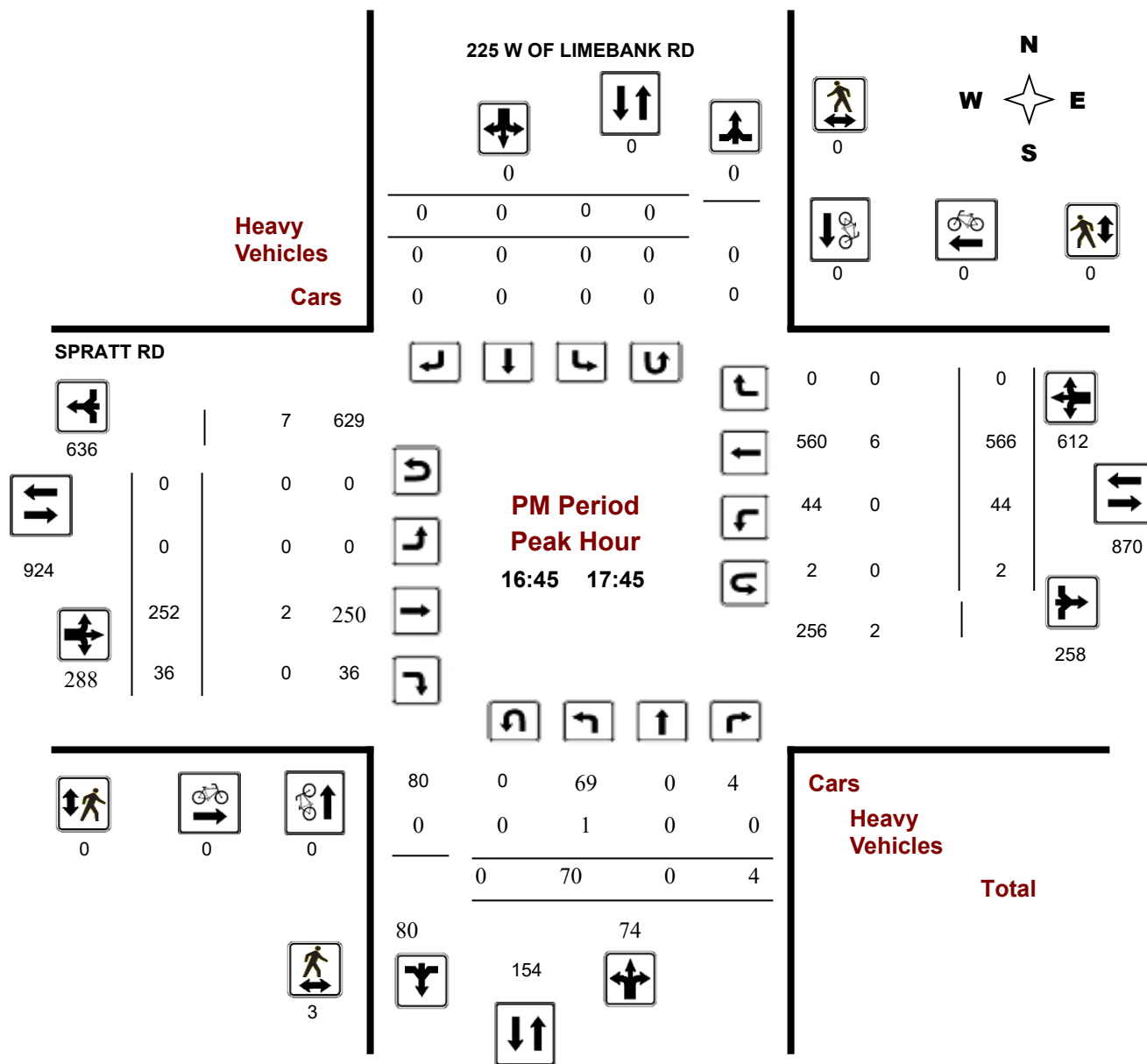
### 225 W OF LIMEBANK RD @ SPRATT RD

**Survey Date:** Wednesday, November 21, 2018

**Start Time:** 07:00

**WO No:** 38151

**Device:** Miovision



## Turning Movement Count - Peak Hour Diagram

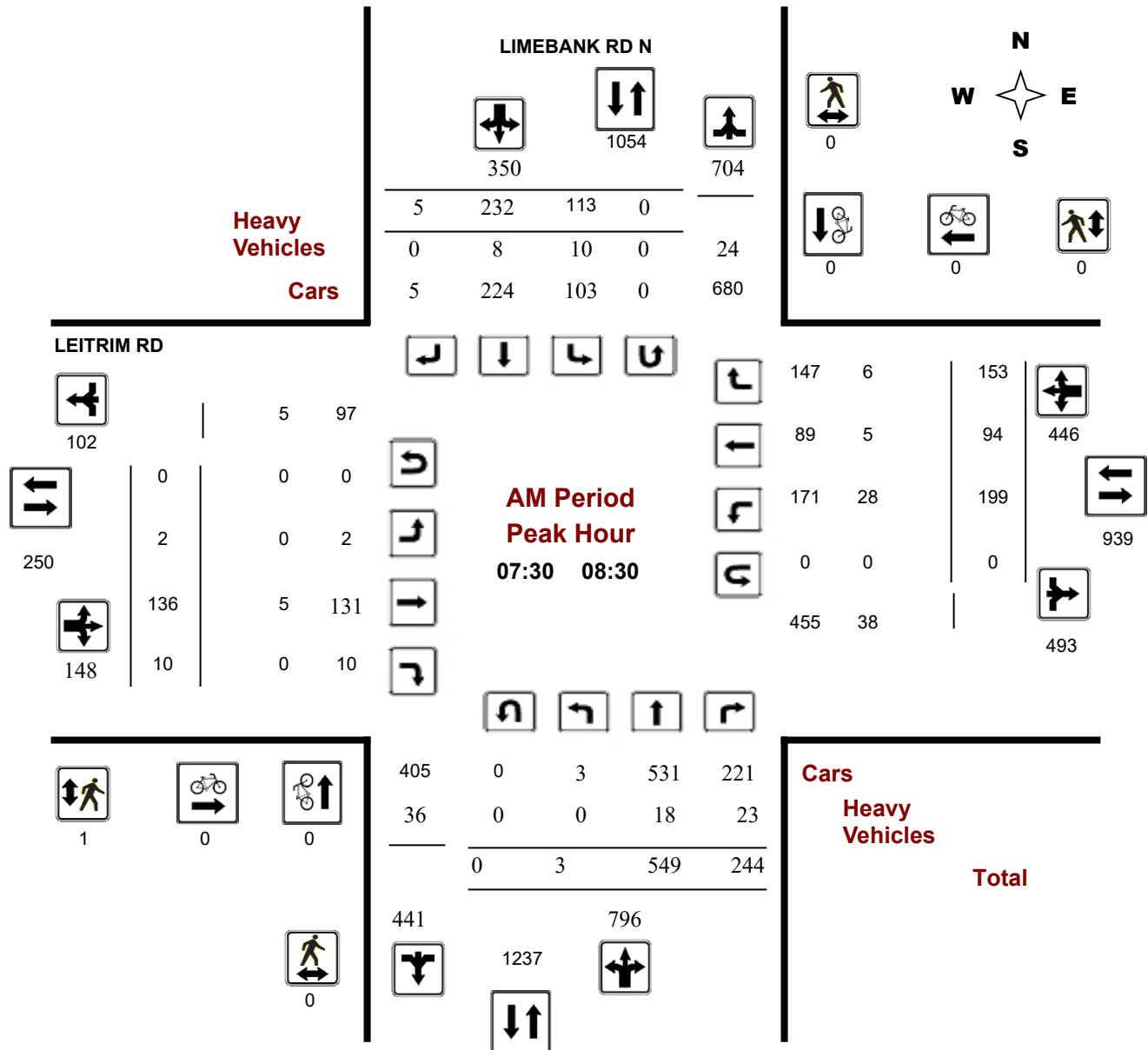
### LEITRIM RD @ LIMEBANK RD N

**Survey Date:** Wednesday, February 02, 2022

**Start Time:** 07:00

**WO No:** 40094

**Device:** Miovision



**Comments**

## Turning Movement Count - Peak Hour Diagram

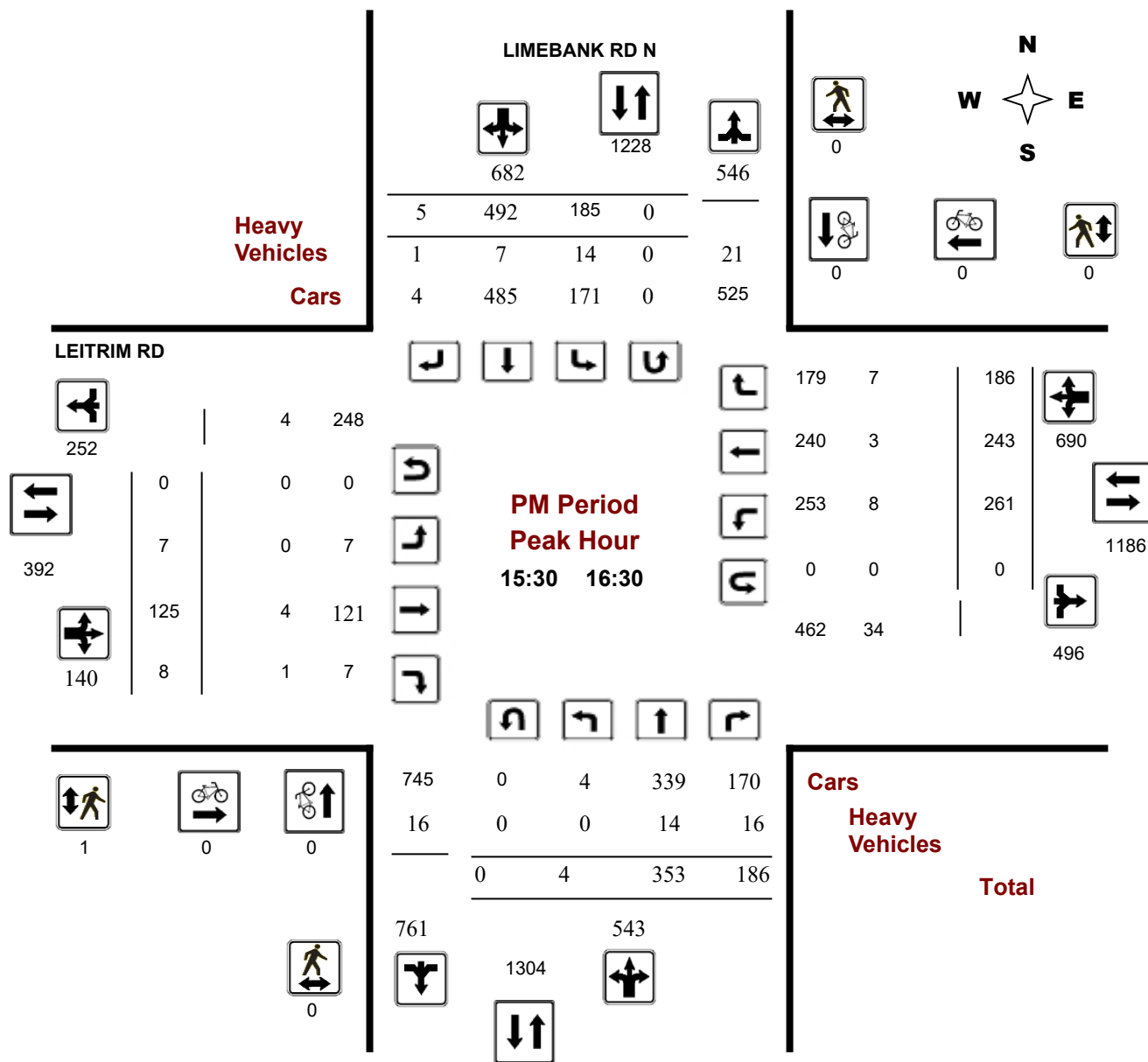
## LEITRIM RD @ LIMEBANK RD N

**Survey Date:** Wednesday, February 02, 2022

**Start Time:** 07:00

**WO No:** 40094

**Device:** Miovision



## Comments



# Transportation Services - Traffic Services

## Turning Movement Count - Peak Hour Diagram

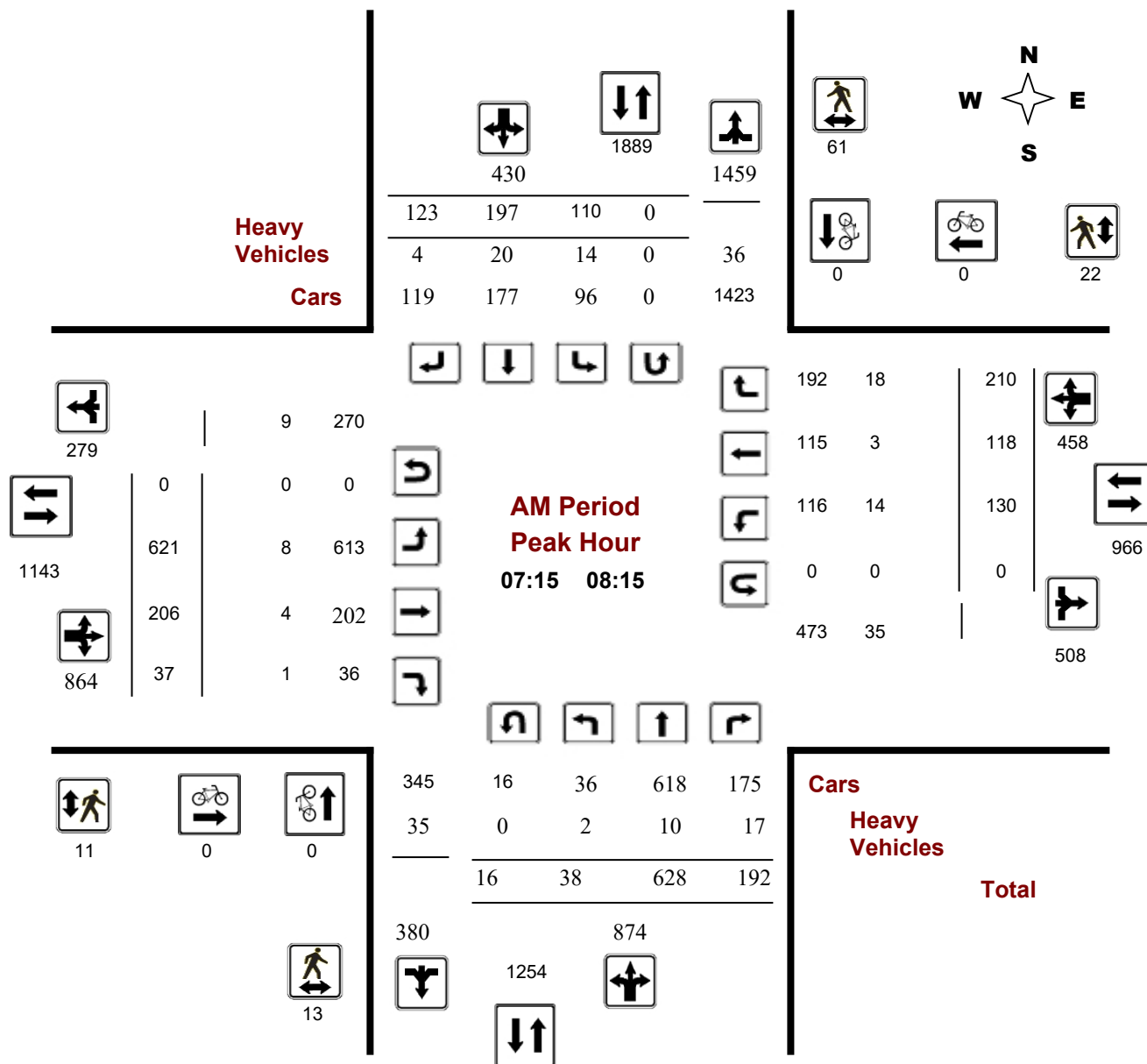
### LIMEBANK RD @ SPRATT RD

**Survey Date:** Wednesday, December 18, 2019

**Start Time:** 07:00

**WO No:** 39637

**Device:** Miovision



**Comments** 5467460 - LIMEBANK RD & SPRATT RD - WED DEC 18TH - 8 HRS - LORETTA

## Turning Movement Count - Peak Hour Diagram

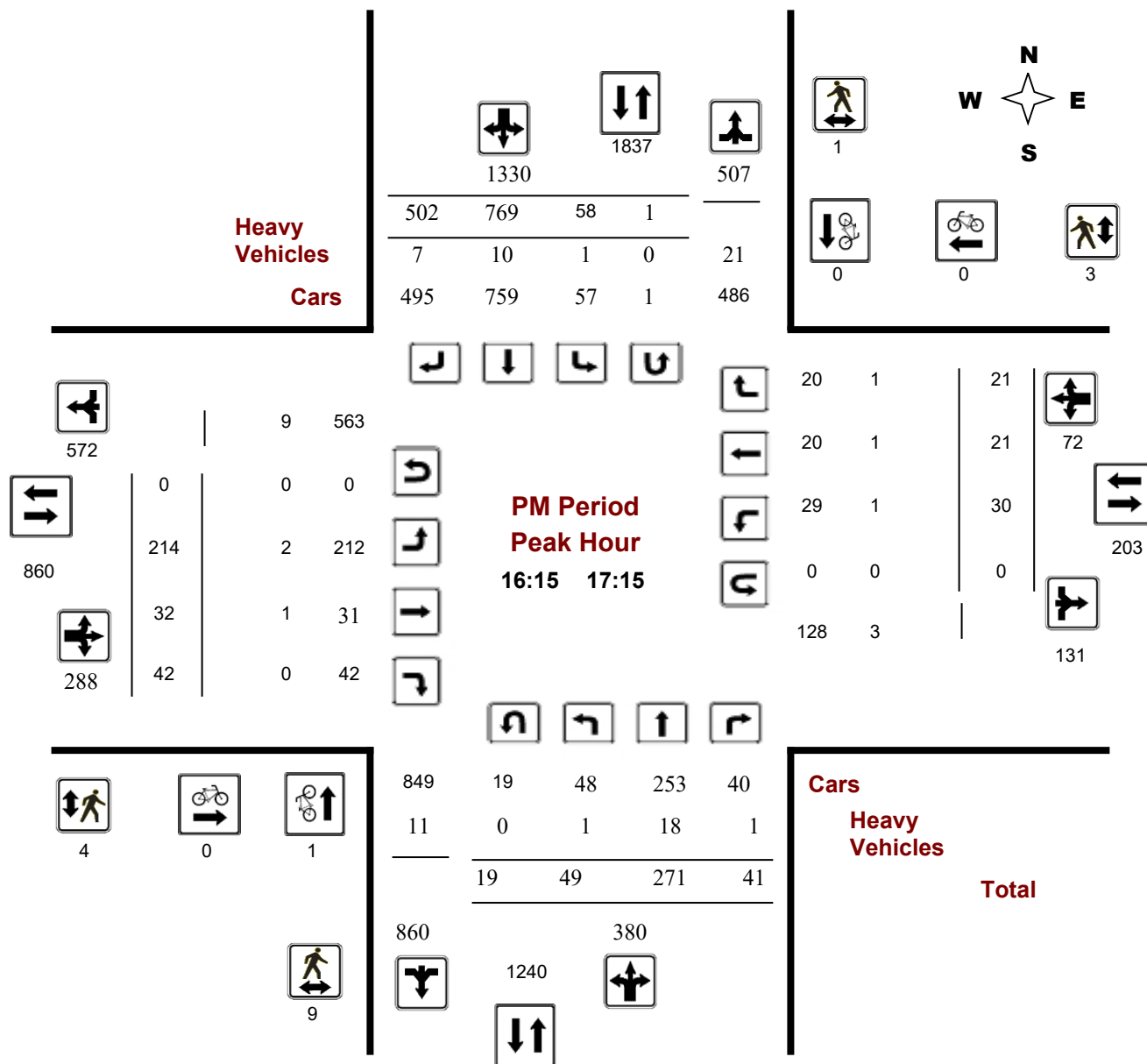
### LIMEBANK RD @ SPRATT RD

**Survey Date:** Wednesday, December 18, 2019

**Start Time:** 07:00

**WO No:** 39637

**Device:** Miovision



**Comments** 5467460 - LIMEBANK RD & SPRATT RD - WED DEC 18TH - 8 HRS - LORETTA

## Appendix F – Trip Generation Data

## South Gloucester / Leirim

### Demographic Characteristics

|                     |        |                         |        |
|---------------------|--------|-------------------------|--------|
| Population          | 17,600 | Actively Travelled      | 14,190 |
| Employed Population | 8,910  | Number of Vehicles      | 11,080 |
| Households          | 6,240  | Area (km <sup>2</sup> ) | 78.9   |

| Occupation Status (age 5+) | Male         | Female       | Total         |
|----------------------------|--------------|--------------|---------------|
| Full Time Employed         | 4,550        | 3,630        | 8,180         |
| Part Time Employed         | 130          | 590          | 730           |
| Student                    | 2,160        | 2,130        | 4,290         |
| Retiree                    | 720          | 770          | 1,490         |
| Unemployed                 | 90           | 220          | 320           |
| Homemaker                  | 20           | 540          | 560           |
| Other                      | 80           | 120          | 200           |
| <b>Total:</b>              | <b>7,750</b> | <b>8,010</b> | <b>15,760</b> |

| Traveller Characteristics | Male | Female | Total |
|---------------------------|------|--------|-------|
| Transit Pass Holders      | 790  | 1,070  | 1,850 |

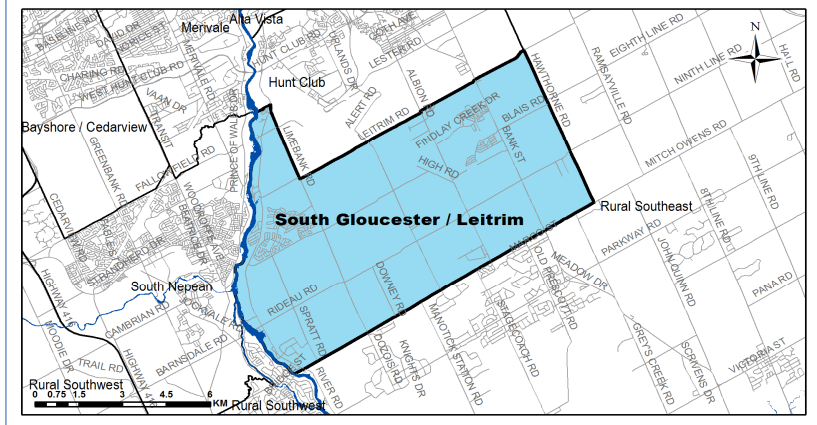
|                  |       |       |        |
|------------------|-------|-------|--------|
| Licensed Drivers | 5,790 | 5,940 | 11,730 |
|------------------|-------|-------|--------|

|               |    |    |    |
|---------------|----|----|----|
| Telecommuters | 60 | 10 | 70 |
|---------------|----|----|----|

|                         |        |        |        |
|-------------------------|--------|--------|--------|
| Trips made by residents | 20,810 | 24,430 | 45,240 |
|-------------------------|--------|--------|--------|

#### Selected Indicators

|                                 |      |
|---------------------------------|------|
| Daily Trips per Person (age 5+) | 2.87 |
| Vehicles per Person             | 0.63 |
| Number of Persons per Household | 2.82 |
| Daily Trips per Household       | 7.25 |
| Vehicles per Household          | 1.78 |
| Workers per Household           | 1.43 |
| Population Density (Pop/km2)    | 220  |



#### Household Size

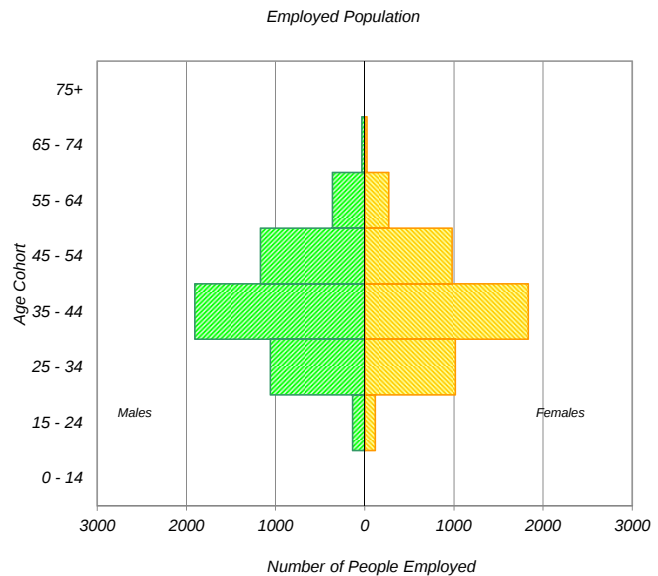
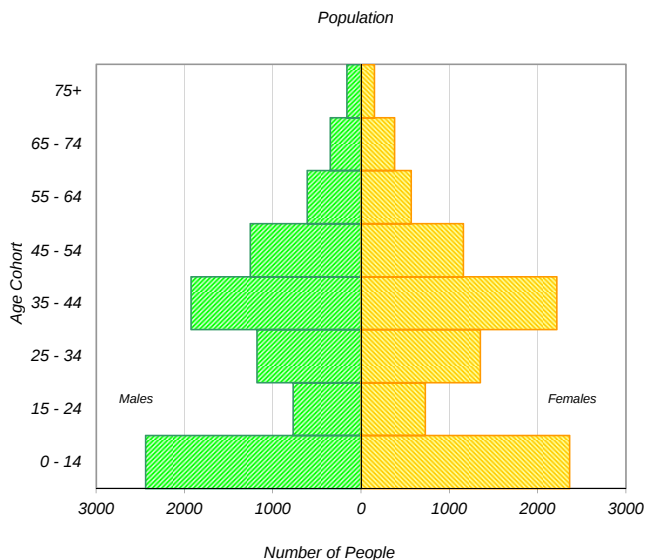
|               |              |             |
|---------------|--------------|-------------|
| 1 person      | 880          | 14%         |
| 2 persons     | 1,870        | 30%         |
| 3 persons     | 1,170        | 19%         |
| 4 persons     | 1,630        | 26%         |
| 5+ persons    | 690          | 11%         |
| <b>Total:</b> | <b>6,240</b> | <b>100%</b> |

#### Households by Vehicle Availability

|               |              |             |
|---------------|--------------|-------------|
| 0 vehicles    | 40           | 1%          |
| 1 vehicle     | 2,080        | 33%         |
| 2 vehicles    | 3,510        | 56%         |
| 3 vehicles    | 510          | 8%          |
| 4+ vehicles   | 100          | 2%          |
| <b>Total:</b> | <b>6,240</b> | <b>100%</b> |

#### Households by Dwelling Type

|                 |              |             |
|-----------------|--------------|-------------|
| Single-detached | 3,300        | 53%         |
| Semi-detached   | 770          | 12%         |
| Townhouse       | 2,010        | 32%         |
| Apartment/Condo | 150          | 2%          |
| <b>Total:</b>   | <b>6,240</b> | <b>100%</b> |

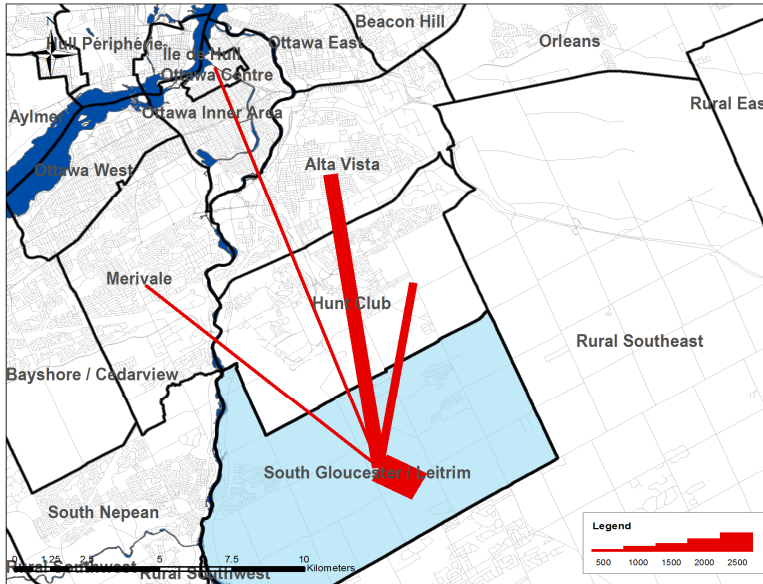


\* In 2005 data was only collected for household members aged 11+ therefore these results cannot be compared to the 2011 data.

## Travel Patterns

### Top Five Destinations of Trips from South Gloucester / Leirtrim

#### AM Peak Period



### Summary of Trips to and from South Gloucester / Leirtrim

#### AM Peak Period (6:30 - 8:59)

| Districts                   | Destinations of     |         | Origins of        |         |
|-----------------------------|---------------------|---------|-------------------|---------|
|                             | Trips From District | % Total | Trips To District | % Total |
| Ottawa Centre               | 930                 | 9%      | 0                 | 0%      |
| Ottawa Inner Area           | 530                 | 5%      | 250               | 4%      |
| Ottawa East                 | 240                 | 2%      | 40                | 1%      |
| Beacons Hill                | 240                 | 2%      | 30                | 0%      |
| Alta Vista                  | 1,970               | 18%     | 160               | 2%      |
| Hunt Club                   | 1,100               | 10%     | 870               | 13%     |
| Merivale                    | 770                 | 7%      | 340               | 5%      |
| Ottawa West                 | 290                 | 3%      | 0                 | 0%      |
| Bayshore / Cedarview        | 170                 | 2%      | 70                | 1%      |
| Orléans                     | 50                  | 0%      | 170               | 3%      |
| Rural East                  | 0                   | 0%      | 10                | 0%      |
| Rural Southeast             | 210                 | 2%      | 570               | 8%      |
| South Gloucester / Leirtrim | 3,680               | 34%     | 3,680             | 55%     |
| South Nepean                | 310                 | 3%      | 100               | 1%      |
| Rural Southwest             | 120                 | 1%      | 220               | 3%      |
| Kanata / Stittsville        | 140                 | 1%      | 60                | 1%      |
| Rural West                  | 40                  | 0%      | 60                | 1%      |
| Île de Hull                 | 90                  | 1%      | 0                 | 0%      |
| Hull Périphérie             | 10                  | 0%      | 20                | 0%      |
| Plateau                     | 0                   | 0%      | 20                | 0%      |
| Aylmer                      | 0                   | 0%      | 0                 | 0%      |
| Rural Northwest             | 20                  | 0%      | 10                | 0%      |
| Pointe Gatineau             | 10                  | 0%      | 30                | 0%      |
| Gatineau Est                | 0                   | 0%      | 0                 | 0%      |
| Rural Northeast             | 20                  | 0%      | 0                 | 0%      |
| Buckingham / Masson-Angers  | 0                   | 0%      | 20                | 0%      |
| Ontario Sub-Total:          | 10,790              | 99%     | 6,630             | 99%     |
| Québec Sub-Total:           | 150                 | 1%      | 100               | 1%      |
| Total:                      | 10,940              | 100%    | 6,730             | 100%    |

### Trips by Trip Purpose

| 24 Hours                  | From District |      | To District |      | Within District |      |
|---------------------------|---------------|------|-------------|------|-----------------|------|
| Work or related           | 6,300         | 29%  | 3,270       | 15%  | 700             | 6%   |
| School                    | 1,640         | 8%   | 840         | 4%   | 1,930           | 16%  |
| Shopping                  | 1,830         | 8%   | 720         | 3%   | 700             | 6%   |
| Leisure                   | 2,730         | 13%  | 1,990       | 9%   | 660             | 6%   |
| Medical                   | 440           | 2%   | 120         | 1%   | 120             | 1%   |
| Pick-up / drive passenger | 1,610         | 7%   | 970         | 4%   | 1,720           | 14%  |
| Return Home               | 6,020         | 28%  | 13,110      | 60%  | 5,320           | 44%  |
| Other                     | 1,160         | 5%   | 680         | 3%   | 850             | 7%   |
| Total:                    | 21,730        | 100% | 21,700      | 100% | 12,000          | 100% |

| AM Peak (06:30 - 08:59)   | From District |      | To District |      | Within District |      |
|---------------------------|---------------|------|-------------|------|-----------------|------|
| Work or related           | 4,650         | 64%  | 1,740       | 57%  | 420             | 11%  |
| School                    | 1,310         | 18%  | 810         | 27%  | 1,580           | 43%  |
| Shopping                  | 60            | 1%   | 40          | 1%   | 10              | 0%   |
| Leisure                   | 140           | 2%   | 50          | 2%   | 0               | 0%   |
| Medical                   | 80            | 1%   | 0           | 0%   | 0               | 0%   |
| Pick-up / drive passenger | 780           | 11%  | 180         | 6%   | 900             | 25%  |
| Return Home               | 100           | 1%   | 120         | 4%   | 330             | 9%   |
| Other                     | 150           | 2%   | 110         | 4%   | 430             | 12%  |
| Total:                    | 7,270         | 100% | 3,050       | 100% | 3,670           | 100% |

| PM Peak (15:30 - 17:59)   | From District |      | To District |      | Within District |      |
|---------------------------|---------------|------|-------------|------|-----------------|------|
| Work or related           | 140           | 3%   | 150         | 2%   | 40              | 1%   |
| School                    | 30            | 1%   | 0           | 0%   | 80              | 2%   |
| Shopping                  | 270           | 6%   | 170         | 2%   | 210             | 6%   |
| Leisure                   | 840           | 19%  | 420         | 6%   | 140             | 4%   |
| Medical                   | 50            | 1%   | 0           | 0%   | 30              | 1%   |
| Pick-up / drive passenger | 310           | 7%   | 360         | 5%   | 400             | 12%  |
| Return Home               | 2,400         | 54%  | 5,990       | 82%  | 2,350           | 69%  |
| Other                     | 400           | 9%   | 200         | 3%   | 150             | 4%   |
| Total:                    | 4,440         | 100% | 7,290       | 100% | 3,400           | 100% |

| Peak Period (%) | Total: | % of 24 Hours | Within District (%) |
|-----------------|--------|---------------|---------------------|
| 24 Hours        | 55,430 |               | 22%                 |
| AM Peak Period  | 13,990 | 25%           | 26%                 |
| PM Peak Period  | 15,130 | 27%           | 22%                 |

### Trips by Primary Travel Mode

| 24 Hours       | From District |      | To District |      | Within District |      |
|----------------|---------------|------|-------------|------|-----------------|------|
| Auto Driver    | 14,990        | 69%  | 14,970      | 69%  | 5,210           | 43%  |
| Auto Passenger | 3,870         | 18%  | 3,650       | 17%  | 3,120           | 26%  |
| Transit        | 1,630         | 8%   | 1,740       | 8%   | 200             | 2%   |
| Bicycle        | 90            | 0%   | 100         | 0%   | 20              | 0%   |
| Walk           | 40            | 0%   | 40          | 0%   | 2,680           | 22%  |
| Other          | 1,110         | 5%   | 1,200       | 6%   | 770             | 6%   |
| Total:         | 21,730        | 100% | 21,700      | 100% | 12,000          | 100% |

| AM Peak (06:30 - 08:59) | From District |      | To District |      | Within District |      |
|-------------------------|---------------|------|-------------|------|-----------------|------|
| Auto Driver             | 4,640         | 64%  | 2,070       | 68%  | 1,540           | 42%  |
| Auto Passenger          | 1,260         | 17%  | 210         | 7%   | 1,140           | 31%  |
| Transit                 | 860           | 12%  | 100         | 3%   | 60              | 2%   |
| Bicycle                 | 70            | 1%   | 20          | 1%   | 10              | 0%   |
| Walk                    | 20            | 0%   | 0           | 0%   | 620             | 17%  |
| Other                   | 420           | 6%   | 640         | 21%  | 300             | 8%   |
| Total:                  | 7,270         | 100% | 3,040       | 100% | 3,670           | 100% |

| PM Peak (15:30 - 17:59) | From District |      | To District |      | Within District |      |
|-------------------------|---------------|------|-------------|------|-----------------|------|
| Auto Driver             | 3,100         | 70%  | 4,920       | 67%  | 1,510           | 44%  |
| Auto Passenger          | 1,020         | 23%  | 1,120       | 15%  | 860             | 25%  |
| Transit                 | 150           | 3%   | 790         | 11%  | 50              | 1%   |
| Bicycle                 | 20            | 0%   | 80          | 1%   | 0               | 0%   |
| Walk                    | 10            | 0%   | 0           | 0%   | 850             | 25%  |
| Other                   | 130           | 3%   | 390         | 5%   | 130             | 4%   |
| Total:                  | 4,430         | 100% | 7,300       | 100% | 3,400           | 100% |

| Avg Vehicle Occupancy | From District |  | To District |  | Within District |  |
|-----------------------|---------------|--|-------------|--|-----------------|--|
| 24 Hours              | 1.26          |  | 1.24        |  | 1.60            |  |
| AM Peak Period        | 1.27          |  | 1.10        |  | 1.74            |  |
| PM Peak Period        | 1.33          |  | 1.23        |  | 1.57            |  |

| Transit Modal Split | From District |  | To District |  | Within District |  |
|---------------------|---------------|--|-------------|--|-----------------|--|
| 24 Hours            | 8%            |  | 9%          |  | 2%              |  |
| AM Peak Period      | 13%           |  | 4%          |  | 2%              |  |
| PM Peak Period      | 4%            |  | 12%         |  | 2%              |  |

# Industrial Park

## (130)

Vehicle Trip Ends vs:

Employees

On a:

Weekday,  
Peak Hour of Adjacent Street Traffic,  
One Hour Between 7 and 9 a.m.

Setting/Location:

General Urban/Suburban

Number of Studies:

15

Avg. Num. of Employees:

878

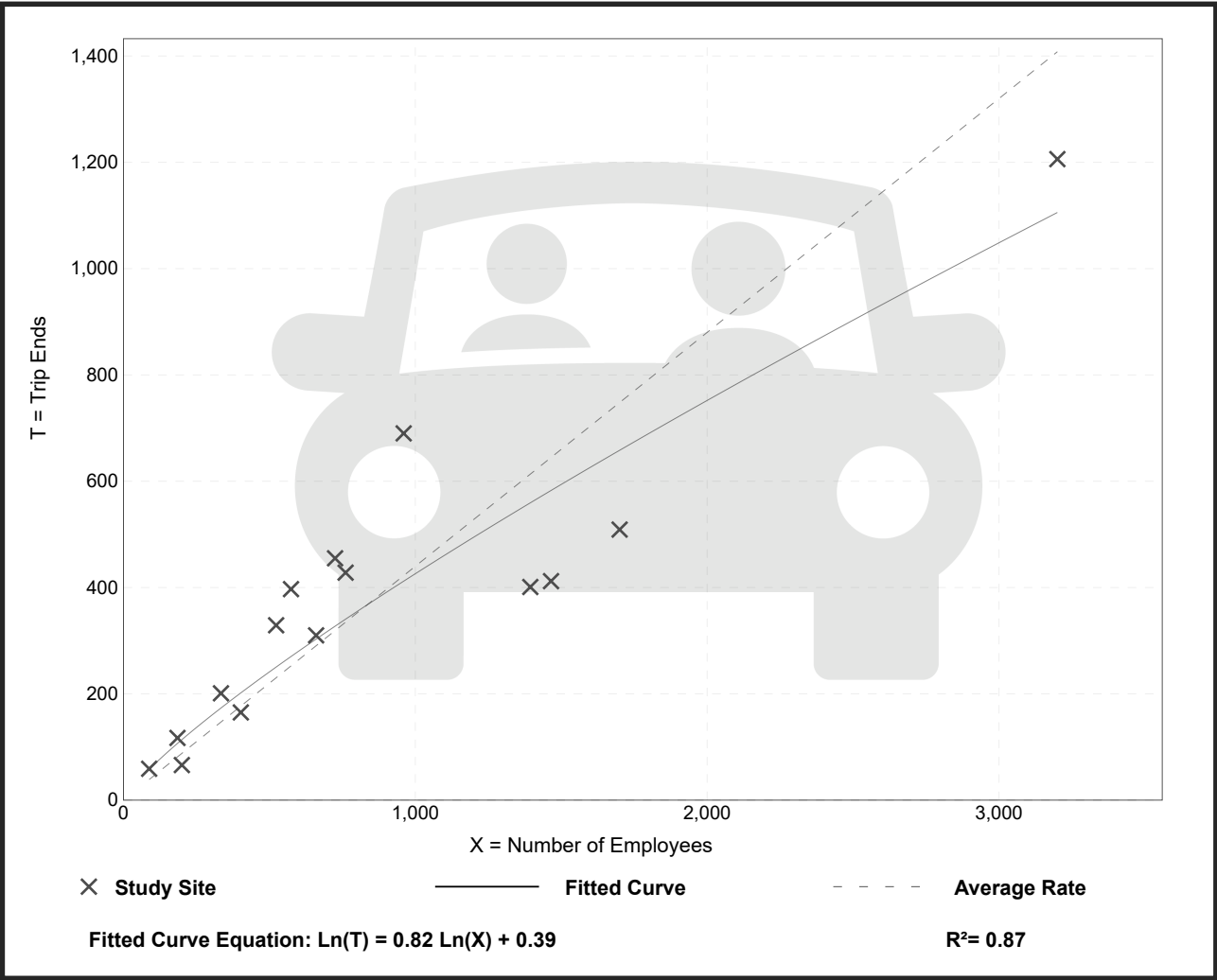
Directional Distribution:

86% entering, 14% exiting

### Vehicle Trip Generation per Employee

| Average Rate | Range of Rates | Standard Deviation |
|--------------|----------------|--------------------|
| 0.44         | 0.28 - 0.72    | 0.16               |

### Data Plot and Equation



## Industrial Park (130)

**Vehicle Trip Ends vs: Employees**

**On a: Weekday,  
Peak Hour of Adjacent Street Traffic,  
One Hour Between 4 and 6 p.m.**

**Setting/Location: General Urban/Suburban**

Number of Studies: 14

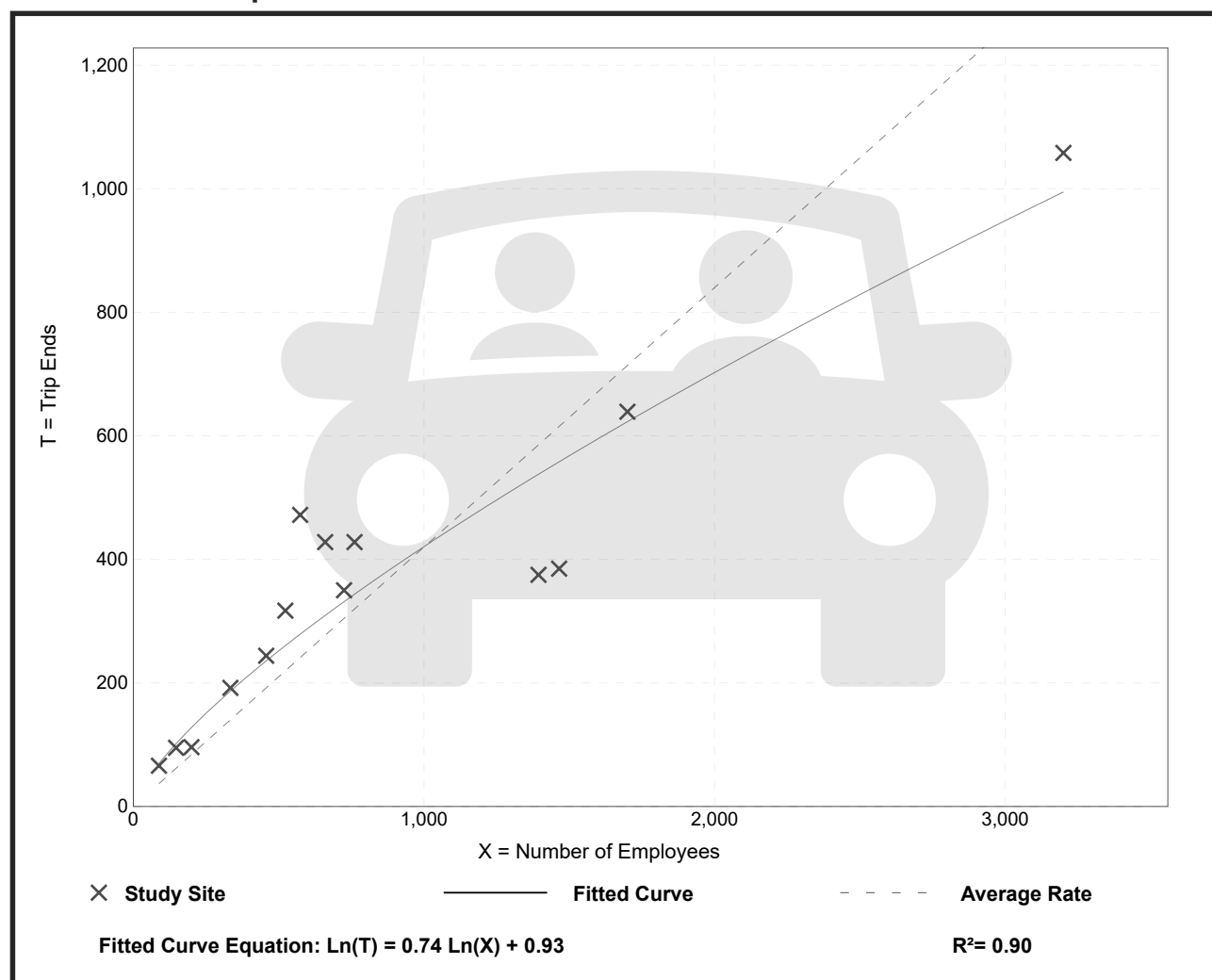
Avg. Num. of Employees: 873

Directional Distribution: 20% entering, 80% exiting

### Vehicle Trip Generation per Employee

| Average Rate | Range of Rates | Standard Deviation |
|--------------|----------------|--------------------|
| 0.42         | 0.26 - 0.82    | 0.16               |

### Data Plot and Equation



to make use of this resource while considering the local land use context and trip characteristics for all travel modes through local and regional data.

**Table 2: Person-Trip Conversion Factor**

| Factor                        | Application                                                                                                                                                                                       | Apply To           | Period | Value |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------|-------|
| Person-Trip Conversion Factor | Vehicle to person-trip conversion, to normalize the measure of trip rates to account for all modes. Applicable to the ITE trip generation rates, which are mainly reported as vehicle trip rates. | Vehicle trip rates | All    | 1.28  |

## 3 RESIDENTIAL TRIP GENERATION RATES

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### 3.1 Development of Residential Trip Rates

The residential trip generation rates in this manual are reflect the number of **person-trips per household** during the **peak period**. The morning peak period is from 7:00 AM to 9:30 AM, while the afternoon peak period is from 3:30 PM to 6:00 PM.

A geographic review of trip generation rates found that rates varied by dwelling type but not significantly by the geographic sectors and districts used in the 2009 TRANS Trip Generation Study<sup>1</sup>. As such, residential trip generation rates in this manual are defined for the following three dwelling types:

- Single-Family Detached Housing
- Multifamily Housing (Low-Rise)
- Multifamily Housing (High-Rise)

Low-rise housing refers to any building that houses multiple families that is two storeys or less (e.g. semi-detached homes, townhouses). High-rise housing refers to any building that houses multiple families that is three or more storeys (e.g. apartments and condo buildings). These dwelling types are from the TRANS Origin-Destination Survey but are organized to be equivalent to the categories of the ITE *Trip Generation Manual* and local generator surveys.

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<sup>1</sup> While person trip rates were not found to vary significantly with geographic area, location does have an impact on mode share as discussed in Section 4.2. As a result, vehicular trip rates do vary by geography as reflected in previous versions of the manual. The variation by dwelling type, in part, reflects differences in the number of persons per dwelling.

### 3.2 Recommended Residential Trip Generation Rates

A blended trip rate was developed from the three data sources through application of a rank-sum weighting process, considering the strengths and weaknesses of each dataset for the dwelling type in question. The recommended blended **residential person-trip rates** are presented in **Table 3**. All rates represent person-trips per dwelling unit and are to be applied to the **AM or PM peak period**.

**Table 3: Recommended Residential Person-trip Rates**

| ITE Land Use Code | Dwelling Unit Type     | Period | Person-Trip Rate |
|-------------------|------------------------|--------|------------------|
| 210               | Single-detached        | AM     | 2.05             |
|                   |                        | PM     | 2.48             |
| 220               | Multi-Unit (Low-Rise)  | AM     | 1.35             |
|                   |                        | PM     | 1.58             |
| 221 & 222         | Multi-Unit (High-Rise) | AM     | 0.80             |
|                   |                        | PM     | 0.90             |

### 3.3 Adjustment Factors – Peak Period to Peak Hour

The various trip generation data sources require some adjustment to standardize the data for developing robust blended trip rates. The peak period conversion factor in **Table 4** may be used where applicable to develop trip generation rate estimates in the desired format.

**Table 4: Adjustment Factors for Residential Trip Generation Rates**

| Factor                        | Application                                                                                                                                                                                                                                                                                                                 | Apply To                           | Period | Value |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|--------|-------|
| Peak Period Conversion Factor | <b>Peak period to peak hour conversion.</b> Because the 2020 TRANS Trip Generation Study reports trip generation rates by peak period, factors must be applied if the practitioner requires peak hour rates. In practice, the conversion to peak hour trip rates should occur <b>after</b> the application of modal shares. | Person-trip rates per peak period  | AM     | 0.50  |
|                               |                                                                                                                                                                                                                                                                                                                             |                                    | PM     | 0.44  |
|                               |                                                                                                                                                                                                                                                                                                                             | Vehicle trip rates per peak period | AM     | 0.48  |
|                               |                                                                                                                                                                                                                                                                                                                             |                                    | PM     | 0.44  |
|                               |                                                                                                                                                                                                                                                                                                                             | Transit trip rates per peak period | AM     | 0.55  |
|                               |                                                                                                                                                                                                                                                                                                                             |                                    | PM     | 0.47  |
|                               |                                                                                                                                                                                                                                                                                                                             | Cycling trip rates per peak period | AM     | 0.58  |
|                               |                                                                                                                                                                                                                                                                                                                             |                                    | PM     | 0.48  |
|                               |                                                                                                                                                                                                                                                                                                                             | Walking trip rates per peak period | AM     | 0.58  |
|                               |                                                                                                                                                                                                                                                                                                                             |                                    | PM     | 0.52  |

**Table 7: Residential Mode Share for Low-Rise Multifamily Housing**

| District                    | Period | Mode        |            |         |         |         |
|-----------------------------|--------|-------------|------------|---------|---------|---------|
|                             |        | Auto Driver | Auto Pass. | Transit | Cycling | Walking |
| Ottawa Centre               | AM     | 27%         | 9%         | 25%     | 9%      | 30%     |
|                             | PM     | 31%         | 10%        | 20%     | 9%      | 30%     |
| Ottawa Inner Area           | AM     | 27%         | 8%         | 26%     | 9%      | 30%     |
|                             | PM     | 31%         | 9%         | 20%     | 9%      | 31%     |
| Île de Hull                 | AM     | 27%         | 9%         | 25%     | 9%      | 30%     |
|                             | PM     | 34%         | 22%        | 16%     | 5%      | 22%     |
| Ottawa East                 | AM     | 36%         | 11%        | 38%     | 7%      | 8%      |
|                             | PM     | 39%         | 16%        | 29%     | 5%      | 11%     |
| Beacon Hill                 | AM     | 45%         | 9%         | 35%     | 1%      | 10%     |
|                             | PM     | 48%         | 16%        | 24%     | 1%      | 11%     |
| Alta Vista                  | AM     | 38%         | 15%        | 35%     | 1%      | 10%     |
|                             | PM     | 38%         | 19%        | 31%     | 2%      | 10%     |
| Hunt Club                   | AM     | 44%         | 11%        | 38%     | 1%      | 6%      |
|                             | PM     | 47%         | 15%        | 29%     | 1%      | 8%      |
| Merivale                    | AM     | 44%         | 11%        | 32%     | 6%      | 7%      |
|                             | PM     | 44%         | 12%        | 29%     | 4%      | 11%     |
| Ottawa West                 | AM     | 36%         | 12%        | 24%     | 10%     | 19%     |
|                             | PM     | 35%         | 12%        | 16%     | 10%     | 27%     |
| Bayshore/Cedarview          | AM     | 43%         | 11%        | 31%     | 1%      | 13%     |
|                             | PM     | 44%         | 14%        | 25%     | 1%      | 15%     |
| Hull Périphérie             | AM     | 46%         | 22%        | 22%     | 4%      | 6%      |
|                             | PM     | 46%         | 17%        | 22%     | 3%      | 11%     |
| Orleans                     | AM     | 47%         | 15%        | 29%     | 1%      | 9%      |
|                             | PM     | 51%         | 19%        | 24%     | 1%      | 6%      |
| South Gloucester / Leirtrim | AM     | 59%         | 20%        | 16%     | 1%      | 4%      |
|                             | PM     | 62%         | 18%        | 17%     | 1%      | 3%      |
| South Nepean                | AM     | 49%         | 13%        | 26%     | 2%      | 9%      |
|                             | PM     | 49%         | 13%        | 24%     | 2%      | 12%     |
| Kanata - Stittsville        | AM     | 52%         | 14%        | 22%     | 0%      | 11%     |
|                             | PM     | 58%         | 17%        | 17%     | 0%      | 8%      |
| Plateau                     | AM     | 44%         | 18%        | 28%     | 4%      | 6%      |
|                             | PM     | 47%         | 17%        | 26%     | 2%      | 8%      |
| Aylmer                      | AM     | 52%         | 18%        | 23%     | 0%      | 7%      |
|                             | PM     | 52%         | 16%        | 20%     | 1%      | 12%     |
| Pointe Gatineau             | AM     | 46%         | 17%        | 23%     | 0%      | 14%     |
|                             | PM     | 52%         | 16%        | 19%     | 1%      | 12%     |
| Gatineau Est                | AM     | 54%         | 17%        | 20%     | 1%      | 8%      |
|                             | PM     | 56%         | 21%        | 16%     | 0%      | 7%      |
| Masson-Angers               | AM     | 60%         | 15%        | 21%     | 4%      | 1%      |
|                             | PM     | 63%         | 15%        | 17%     | 3%      | 1%      |
| Other Rural Districts       | AM     | 66%         | 13%        | 21%     | 1%      | 0%      |
|                             | PM     | 62%         | 19%        | 16%     | 3%      | 0%      |

## 5 RESIDENTIAL DIRECTIONAL SPLITS

After calculating the total person trips generated by the development and applying the appropriate modal shares, directional factors can be applied to estimate the number of inbound and outbound trips by vehicle. The vehicle trip directional splits were developed for both the AM and PM peak periods<sup>2</sup>. The vehicle trip directional splits, as shown in **Table 9**, have been developed for the NCR based on a review of the local trip generator surveys as well as the latest published data in the *ITE Trip Generation Manual* (10<sup>th</sup> Edition).

**Table 9: Recommended Vehicle Trip Directional Splits (Peak Period)**

| ITE Land Use Code | Dwelling Unit Type     | Period | Inbound | Outbound |
|-------------------|------------------------|--------|---------|----------|
| 210               | Single-detached        | AM     | 30%     | 70%      |
|                   |                        | PM     | 62%     | 38%      |
| 220               | Multi-Unit (Low-Rise)  | AM     | 30%     | 70%      |
|                   |                        | PM     | 56%     | 44%      |
| 221 & 222         | Multi-Unit (High-Rise) | AM     | 31%     | 69%      |
|                   |                        | PM     | 58%     | 42%      |

## 6 NON-RESIDENTIAL MODE SHARE

Mode shares were developed for three types of non-residential development: schools (elementary and high school); employment generators; and commercial (retail) generators. These mode shares were developed through data provided by the Ville de Gatineau from local school surveys as well as the TRANS Origin-Destination Survey. The non-residential mode shares presented below are limited and do not capture all development types. For data on the travel characteristics associated with colleges and universities, transportation terminals, and sports and entertainment venues in the National Capital Region, practitioners should refer to the various reports for the TRANS *Special Generators Survey* (2013), which are posted on the TRANS website. For other development types, practitioners may need to carry out their own local generator data collection where necessary.

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<sup>2</sup> A directional split for active transportation was calculated based on the local generator surveys for low-rise and mid-rise land uses. The splits are mostly in-line with the vehicle directional splits, which could be used as a rough assumption for areas with lower vehicle mode share.

## Appendix G – TDM Measures

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## **TDM-Supportive Development Design and Infrastructure Checklist:** *Non-Residential Developments (office, institutional, retail or industrial)*

| <b>Legend</b>   |                                                                                                                |
|-----------------|----------------------------------------------------------------------------------------------------------------|
| <b>REQUIRED</b> | The Official Plan or Zoning By-law provides related guidance that must be followed                             |
| <b>BASIC</b>    | The measure is generally feasible and effective, and in most cases would benefit the development and its users |
| <b>BETTER</b>   | The measure could maximize support for users of sustainable modes, and optimize development performance        |

| <b>TDM-supportive design &amp; infrastructure measures:</b><br><i>Non-residential developments</i> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>Check if completed &amp; add descriptions, explanations or plan/drawing references</b> |
|----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| <b>1. WALKING &amp; CYCLING: ROUTES</b>                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                           |
| <b>1.1 Building location &amp; access points</b>                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                           |
| <b>BASIC</b>                                                                                       | 1.1.1 Locate building close to the street, and do not locate parking areas between the street and building entrances                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <input type="checkbox"/>                                                                  |
| <b>BASIC</b>                                                                                       | 1.1.2 Locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <input type="checkbox"/>                                                                  |
| <b>BASIC</b>                                                                                       | 1.1.3 Locate building doors and windows to ensure visibility of pedestrians from the building, for their security and comfort                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <input type="checkbox"/>                                                                  |
| <b>1.2 Facilities for walking &amp; cycling</b>                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                           |
| <b>REQUIRED</b>                                                                                    | 1.2.1 Provide convenient, direct access to stations or major stops along rapid transit routes within 600 metres; minimize walking distances from buildings to rapid transit; provide pedestrian-friendly, weather-protected (where possible) environment between rapid transit accesses and building entrances; ensure quality linkages from sidewalks through building entrances to integrated stops/stations ( <i>see Official Plan policy 4.3.3</i> )                                                                                                                                                                            | <input type="checkbox"/>                                                                  |
| <b>REQUIRED</b>                                                                                    | 1.2.2 Provide safe, direct and attractive pedestrian access from public sidewalks to building entrances through such measures as: reducing distances between public sidewalks and major building entrances; providing walkways from public streets to major building entrances; within a site, providing walkways along the front of adjoining buildings, between adjacent buildings, and connecting areas where people may congregate, such as courtyards and transit stops; and providing weather protection through canopies, colonnades, and other design elements wherever possible ( <i>see Official Plan policy 4.3.12</i> ) | <input type="checkbox"/>                                                                  |

| TDM-supportive design & infrastructure measures:<br><i>Non-residential developments</i> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Check if completed &<br>add descriptions, explanations<br>or plan/drawing references |
|-----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| <b>REQUIRED</b>                                                                         | 1.2.3 Provide sidewalks of smooth, well-drained walking surfaces of contrasting materials or treatments to differentiate pedestrian areas from vehicle areas, and provide marked pedestrian crosswalks at intersection sidewalks ( <i>see Official Plan policy 4.3.10</i> )                                                                                                                                                                                    | <input type="checkbox"/>                                                             |
| <b>REQUIRED</b>                                                                         | 1.2.4 Make sidewalks and open space areas easily accessible through features such as gradual grade transition, depressed curbs at street corners and convenient access to extra-wide parking spaces and ramps ( <i>see Official Plan policy 4.3.10</i> )                                                                                                                                                                                                       | <input type="checkbox"/>                                                             |
| <b>REQUIRED</b>                                                                         | 1.2.5 Include adequately spaced inter-block/street cycling and pedestrian connections to facilitate travel by active transportation. Provide links to the existing or planned network of public sidewalks, multi-use pathways and on-road cycle routes. Where public sidewalks and multi-use pathways intersect with roads, consider providing traffic control devices to give priority to cyclists and pedestrians ( <i>see Official Plan policy 4.3.11</i> ) | <input type="checkbox"/>                                                             |
| <b>BASIC</b>                                                                            | 1.2.6 Provide safe, direct and attractive walking routes from building entrances to nearby transit stops                                                                                                                                                                                                                                                                                                                                                       | <input type="checkbox"/>                                                             |
| <b>BASIC</b>                                                                            | 1.2.7 Ensure that walking routes to transit stops are secure, visible, lighted, shaded and wind-protected wherever possible                                                                                                                                                                                                                                                                                                                                    | <input type="checkbox"/>                                                             |
| <b>BASIC</b>                                                                            | 1.2.8 Design roads used for access or circulation by cyclists using a target operating speed of no more than 30 km/h, or provide a separated cycling facility                                                                                                                                                                                                                                                                                                  | <input type="checkbox"/>                                                             |
| <b>1.3 Amenities for walking &amp; cycling</b>                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                      |
| <b>BASIC</b>                                                                            | 1.3.1 Provide lighting, landscaping and benches along walking and cycling routes between building entrances and streets, sidewalks and trails                                                                                                                                                                                                                                                                                                                  | <input type="checkbox"/>                                                             |
| <b>BASIC</b>                                                                            | 1.3.2 Provide wayfinding signage for site access (where required, e.g. when multiple buildings or entrances exist) and egress (where warranted, such as when directions to reach transit stops/stations, trails or other common destinations are not obvious)                                                                                                                                                                                                  | <input type="checkbox"/>                                                             |

| TDM-supportive design & infrastructure measures:<br><i>Non-residential developments</i> |                                                                                                                                                                                                                                                                            | Check if completed &<br>add descriptions, explanations<br>or plan/drawing references |
|-----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| <b>2. WALKING &amp; CYCLING: END-OF-TRIP FACILITIES</b>                                 |                                                                                                                                                                                                                                                                            |                                                                                      |
| <b>2.1 Bicycle parking</b>                                                              |                                                                                                                                                                                                                                                                            |                                                                                      |
| REQUIRED                                                                                | 2.1.1 Provide bicycle parking in highly visible and lighted areas, sheltered from the weather wherever possible ( <i>see Official Plan policy 4.3.6</i> )                                                                                                                  | <input type="checkbox"/>                                                             |
| REQUIRED                                                                                | 2.1.2 Provide the number of bicycle parking spaces specified for various land uses in different parts of Ottawa; provide convenient access to main entrances or well-used areas ( <i>see Zoning By-law Section 111</i> )                                                   | <input type="checkbox"/>                                                             |
| REQUIRED                                                                                | 2.1.3 Ensure that bicycle parking spaces and access aisles meet minimum dimensions; that no more than 50% of spaces are vertical spaces; and that parking racks are securely anchored ( <i>see Zoning By-law Section 111</i> )                                             | <input type="checkbox"/>                                                             |
| BASIC                                                                                   | 2.1.4 Provide bicycle parking spaces equivalent to the expected number of commuter cyclists (assuming the cycling mode share target is met), plus the expected peak number of customer/visitor cyclists                                                                    | <input type="checkbox"/>                                                             |
| BETTER                                                                                  | 2.1.5 Provide bicycle parking spaces equivalent to the expected number of commuter and customer/visitor cyclists, plus an additional buffer (e.g. 25 percent extra) to encourage other cyclists and ensure adequate capacity in peak cycling season                        | <input type="checkbox"/>                                                             |
| <b>2.2 Secure bicycle parking</b>                                                       |                                                                                                                                                                                                                                                                            |                                                                                      |
| REQUIRED                                                                                | 2.2.1 Where more than 50 bicycle parking spaces are provided for a single office building, locate at least 25% of spaces within a building/structure, a secure area (e.g. supervised parking lot or enclosure) or bicycle lockers ( <i>see Zoning By-law Section 111</i> ) | <input type="checkbox"/>                                                             |
| BETTER                                                                                  | 2.2.2 Provide secure bicycle parking spaces equivalent to the expected number of commuter cyclists (assuming the cycling mode share target is met)                                                                                                                         | <input type="checkbox"/>                                                             |
| <b>2.3 Shower &amp; change facilities</b>                                               |                                                                                                                                                                                                                                                                            |                                                                                      |
| BASIC                                                                                   | 2.3.1 Provide shower and change facilities for the use of active commuters                                                                                                                                                                                                 | <input type="checkbox"/>                                                             |
| BETTER                                                                                  | 2.3.2 In addition to shower and change facilities, provide dedicated lockers, grooming stations, drying racks and laundry facilities for the use of active commuters                                                                                                       | <input type="checkbox"/>                                                             |
| <b>2.4 Bicycle repair station</b>                                                       |                                                                                                                                                                                                                                                                            |                                                                                      |
| BETTER                                                                                  | 2.4.1 Provide a permanent bike repair station, with commonly used tools and an air pump, adjacent to the main bicycle parking area (or secure bicycle parking area, if provided)                                                                                           | <input type="checkbox"/>                                                             |

| TDM-supportive design & infrastructure measures:<br><i>Non-residential developments</i> |                                                                                                                                                                                         | Check if completed &<br>add descriptions, explanations<br>or plan/drawing references |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| <b>3. TRANSIT</b>                                                                       |                                                                                                                                                                                         |                                                                                      |
| <b>3.1 Customer amenities</b>                                                           |                                                                                                                                                                                         |                                                                                      |
| BASIC                                                                                   | 3.1.1 Provide shelters, lighting and benches at any on-site transit stops                                                                                                               | <input type="checkbox"/>                                                             |
| BASIC                                                                                   | 3.1.2 Where the site abuts an off-site transit stop and insufficient space exists for a transit shelter in the public right-of-way, protect land for a shelter and/or install a shelter | <input type="checkbox"/>                                                             |
| BETTER                                                                                  | 3.1.3 Provide a secure and comfortable interior waiting area by integrating any on-site transit stops into the building                                                                 | <input type="checkbox"/>                                                             |
| <b>4. RIDESHARING</b>                                                                   |                                                                                                                                                                                         |                                                                                      |
| <b>4.1 Pick-up &amp; drop-off facilities</b>                                            |                                                                                                                                                                                         |                                                                                      |
| BASIC                                                                                   | 4.1.1 Provide a designated area for carpool drivers (plus taxis and ride-hailing services) to drop off or pick up passengers without using fire lanes or other no-stopping zones        | <input type="checkbox"/>                                                             |
| <b>4.2 Carpool parking</b>                                                              |                                                                                                                                                                                         |                                                                                      |
| BASIC                                                                                   | 4.2.1 Provide signed parking spaces for carpools in a priority location close to a major building entrance, sufficient in number to accommodate the mode share target for carpools      | <input type="checkbox"/>                                                             |
| BETTER                                                                                  | 4.2.2 At large developments, provide spaces for carpools in a separate, access-controlled parking area to simplify enforcement                                                          | <input type="checkbox"/>                                                             |
| <b>5. CARSHARING &amp; BIKESHARING</b>                                                  |                                                                                                                                                                                         |                                                                                      |
| <b>5.1 Carshare parking spaces</b>                                                      |                                                                                                                                                                                         |                                                                                      |
| BETTER                                                                                  | 5.1.1 Provide carshare parking spaces in permitted non-residential zones, occupying either required or provided parking spaces ( <i>see Zoning By-law Section 94</i> )                  | <input type="checkbox"/>                                                             |
| <b>5.2 Bikeshare station location</b>                                                   |                                                                                                                                                                                         |                                                                                      |
| BETTER                                                                                  | 5.2.1 Provide a designated bikeshare station area near a major building entrance, preferably lighted and sheltered with a direct walkway connection                                     | <input type="checkbox"/>                                                             |

| TDM-supportive design & infrastructure measures:<br><i>Non-residential developments</i> |                                                                                                                                                                                                                                                                                                     | Check if completed &<br>add descriptions, explanations<br>or plan/drawing references |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| <b>6. PARKING</b>                                                                       |                                                                                                                                                                                                                                                                                                     |                                                                                      |
| <b>6.1 Number of parking spaces</b>                                                     |                                                                                                                                                                                                                                                                                                     |                                                                                      |
| <b>REQUIRED</b>                                                                         | 6.1.1 Do not provide more parking than permitted by zoning, nor less than required by zoning, unless a variance is being applied for                                                                                                                                                                | <input type="checkbox"/>                                                             |
| <b>BASIC</b>                                                                            | 6.1.2 Provide parking for long-term and short-term users that is consistent with mode share targets, considering the potential for visitors to use off-site public parking                                                                                                                          | <input type="checkbox"/>                                                             |
| <b>BASIC</b>                                                                            | 6.1.3 Where a site features more than one use, provide shared parking and reduce the cumulative number of parking spaces accordingly ( <i>see Zoning By-law Section 104</i> )                                                                                                                       | <input type="checkbox"/>                                                             |
| <b>BETTER</b>                                                                           | 6.1.4 Reduce the minimum number of parking spaces required by zoning by one space for each 13 square metres of gross floor area provided as shower rooms, change rooms, locker rooms and other facilities for cyclists in conjunction with bicycle parking ( <i>see Zoning By-law Section 111</i> ) | <input type="checkbox"/>                                                             |
| <b>6.2 Separate long-term &amp; short-term parking areas</b>                            |                                                                                                                                                                                                                                                                                                     |                                                                                      |
| <b>BETTER</b>                                                                           | 6.2.1 Separate short-term and long-term parking areas using signage or physical barriers, to permit access controls and simplify enforcement (i.e. to discourage employees from parking in visitor spaces, and vice versa)                                                                          | <input type="checkbox"/>                                                             |
| <b>7. OTHER</b>                                                                         |                                                                                                                                                                                                                                                                                                     |                                                                                      |
| <b>7.1 On-site amenities to minimize off-site trips</b>                                 |                                                                                                                                                                                                                                                                                                     |                                                                                      |
| <b>BETTER</b>                                                                           | 7.1.1 Provide on-site amenities to minimize mid-day or mid-commute errands                                                                                                                                                                                                                          | <input type="checkbox"/>                                                             |

## TDM Measures Checklist:

*Non-Residential Developments (office, institutional, retail or industrial)*

| <b>Legend</b> |                                                                                                                |
|---------------|----------------------------------------------------------------------------------------------------------------|
| <b>BASIC</b>  | The measure is generally feasible and effective, and in most cases would benefit the development and its users |
| <b>BETTER</b> | The measure could maximize support for users of sustainable modes, and optimize development performance        |
| <b>★</b>      | The measure is one of the most dependably effective tools to encourage the use of sustainable modes            |

| TDM measures: <i>Non-residential developments</i>                   |                                                                                                                                   | Check if proposed & add descriptions |
|---------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| <b>1. TDM PROGRAM MANAGEMENT</b>                                    |                                                                                                                                   |                                      |
| <b>1.1 Program coordinator</b>                                      |                                                                                                                                   |                                      |
| <b>BASIC</b> ★                                                      | 1.1.1 Designate an internal coordinator, or contract with an external coordinator                                                 | <input type="checkbox"/>             |
| <b>1.2 Travel surveys</b>                                           |                                                                                                                                   |                                      |
| <b>BETTER</b>                                                       | 1.2.1 Conduct periodic surveys to identify travel-related behaviours, attitudes, challenges and solutions, and to track progress  | <input type="checkbox"/>             |
| <b>2. WALKING AND CYCLING</b>                                       |                                                                                                                                   |                                      |
| <b>2.1 Information on walking/cycling routes &amp; destinations</b> |                                                                                                                                   |                                      |
| <b>BASIC</b>                                                        | 2.1.1 Display local area maps with walking/cycling access routes and key destinations at major entrances                          | <input type="checkbox"/>             |
| <b>2.2 Bicycle skills training</b>                                  |                                                                                                                                   |                                      |
| <i>Commuter travel</i>                                              |                                                                                                                                   |                                      |
| <b>BETTER</b> ★                                                     | 2.2.1 Offer on-site cycling courses for commuters, or subsidize off-site courses                                                  | <input type="checkbox"/>             |
| <b>2.3 Valet bike parking</b>                                       |                                                                                                                                   |                                      |
| <i>Visitor travel</i>                                               |                                                                                                                                   |                                      |
| <b>BETTER</b>                                                       | 2.3.1 Offer secure valet bike parking during public events when demand exceeds fixed supply (e.g. for festivals, concerts, games) | <input type="checkbox"/>             |

| TDM measures: <i>Non-residential developments</i> |                                                                                                                                                 | Check if proposed & add descriptions |
|---------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| <b>3. TRANSIT</b>                                 |                                                                                                                                                 |                                      |
| <b>3.1 Transit information</b>                    |                                                                                                                                                 |                                      |
| BASIC                                             | 3.1.1 Display relevant transit schedules and route maps at entrances                                                                            | <input type="checkbox"/>             |
| BASIC                                             | 3.1.2 Provide online links to OC Transpo and STO information                                                                                    | <input type="checkbox"/>             |
| BETTER                                            | 3.1.3 Provide real-time arrival information display at entrances                                                                                | <input type="checkbox"/>             |
| <b>3.2 Transit fare incentives</b>                |                                                                                                                                                 |                                      |
| <i>Commuter travel</i>                            |                                                                                                                                                 |                                      |
| BETTER                                            | 3.2.1 Offer preloaded PRESTO cards to encourage commuters to use transit                                                                        | <input type="checkbox"/>             |
| BETTER ★                                          | 3.2.2 Subsidize or reimburse monthly transit pass purchases by employees                                                                        | <input type="checkbox"/>             |
| <i>Visitor travel</i>                             |                                                                                                                                                 |                                      |
| BETTER                                            | 3.2.3 Arrange inclusion of same-day transit fare in price of tickets (e.g. for festivals, concerts, games)                                      | <input type="checkbox"/>             |
| <b>3.3 Enhanced public transit service</b>        |                                                                                                                                                 |                                      |
| <i>Commuter travel</i>                            |                                                                                                                                                 |                                      |
| BETTER                                            | 3.3.1 Contract with OC Transpo to provide enhanced transit services (e.g. for shift changes, weekends)                                          | <input type="checkbox"/>             |
| <i>Visitor travel</i>                             |                                                                                                                                                 |                                      |
| BETTER                                            | 3.3.2 Contract with OC Transpo to provide enhanced transit services (e.g. for festivals, concerts, games)                                       | <input type="checkbox"/>             |
| <b>3.4 Private transit service</b>                |                                                                                                                                                 |                                      |
| <i>Commuter travel</i>                            |                                                                                                                                                 |                                      |
| BETTER                                            | 3.4.1 Provide shuttle service when OC Transpo cannot offer sufficient quality or capacity to serve demand (e.g. for shift changes, weekends)    | <input type="checkbox"/>             |
| <i>Visitor travel</i>                             |                                                                                                                                                 |                                      |
| BETTER                                            | 3.4.2 Provide shuttle service when OC Transpo cannot offer sufficient quality or capacity to serve demand (e.g. for festivals, concerts, games) | <input type="checkbox"/>             |

| TDM measures: <i>Non-residential developments</i> |                                                                                                     | Check if proposed & add descriptions |
|---------------------------------------------------|-----------------------------------------------------------------------------------------------------|--------------------------------------|
| <b>4. RIDESHARING</b>                             |                                                                                                     |                                      |
| <b>4.1 Ridematching service</b>                   |                                                                                                     |                                      |
| <i>Commuter travel</i>                            |                                                                                                     |                                      |
| <b>BASIC</b> ★                                    | 4.1.1 Provide a dedicated ridematching portal at OttawaRideMatch.com                                | <input type="checkbox"/>             |
| <b>4.2 Carpool parking price incentives</b>       |                                                                                                     |                                      |
| <i>Commuter travel</i>                            |                                                                                                     |                                      |
| <b>BETTER</b>                                     | 4.2.1 Provide discounts on parking costs for registered carpools                                    | <input type="checkbox"/>             |
| <b>4.3 Vanpool service</b>                        |                                                                                                     |                                      |
| <i>Commuter travel</i>                            |                                                                                                     |                                      |
| <b>BETTER</b>                                     | 4.3.1 Provide a vanpooling service for long-distance commuters                                      | <input type="checkbox"/>             |
| <b>5. CARSHARING &amp; BIKESHARING</b>            |                                                                                                     |                                      |
| <b>5.1 Bikeshare stations &amp; memberships</b>   |                                                                                                     |                                      |
| <b>BETTER</b>                                     | 5.1.1 Contract with provider to install on-site bikeshare station for use by commuters and visitors | <input type="checkbox"/>             |
| <i>Commuter travel</i>                            |                                                                                                     |                                      |
| <b>BETTER</b>                                     | 5.1.2 Provide employees with bikeshare memberships for local business travel                        | <input type="checkbox"/>             |
| <b>5.2 Carshare vehicles &amp; memberships</b>    |                                                                                                     |                                      |
| <i>Commuter travel</i>                            |                                                                                                     |                                      |
| <b>BETTER</b>                                     | 5.2.1 Contract with provider to install on-site carshare vehicles and promote their use by tenants  | <input type="checkbox"/>             |
| <b>BETTER</b>                                     | 5.2.2 Provide employees with carshare memberships for local business travel                         | <input type="checkbox"/>             |
| <b>6. PARKING</b>                                 |                                                                                                     |                                      |
| <b>6.1 Priced parking</b>                         |                                                                                                     |                                      |
| <i>Commuter travel</i>                            |                                                                                                     |                                      |
| <b>BASIC</b> ★                                    | 6.1.1 Charge for long-term parking (daily, weekly, monthly)                                         | <input type="checkbox"/>             |
| <b>BASIC</b>                                      | 6.1.2 Unbundle parking cost from lease rates at multi-tenant sites                                  | <input type="checkbox"/>             |
| <i>Visitor travel</i>                             |                                                                                                     |                                      |
| <b>BETTER</b>                                     | 6.1.3 Charge for short-term parking (hourly)                                                        | <input type="checkbox"/>             |

| TDM measures: <i>Non-residential developments</i> |   |                                                                                                                                                           | Check if proposed & add descriptions |
|---------------------------------------------------|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| <b>7. TDM MARKETING &amp; COMMUNICATIONS</b>      |   |                                                                                                                                                           |                                      |
| <b>7.1 Multimodal travel information</b>          |   |                                                                                                                                                           |                                      |
| <i>Commuter travel</i>                            |   |                                                                                                                                                           |                                      |
| BASIC                                             | ★ | 7.1.1 Provide a multimodal travel option information package to new/relocating employees and students                                                     | <input type="checkbox"/>             |
| <i>Visitor travel</i>                             |   |                                                                                                                                                           |                                      |
| BETTER                                            | ★ | 7.1.2 Include multimodal travel option information in invitations or advertising that attract visitors or customers (e.g. for festivals, concerts, games) | <input type="checkbox"/>             |
| <b>7.2 Personalized trip planning</b>             |   |                                                                                                                                                           |                                      |
| <i>Commuter travel</i>                            |   |                                                                                                                                                           |                                      |
| BETTER                                            | ★ | 7.2.1 Offer personalized trip planning to new/relocating employees                                                                                        | <input type="checkbox"/>             |
| <b>7.3 Promotions</b>                             |   |                                                                                                                                                           |                                      |
| <i>Commuter travel</i>                            |   |                                                                                                                                                           |                                      |
| BETTER                                            |   | 7.3.1 Deliver promotions and incentives to maintain awareness, build understanding, and encourage trial of sustainable modes                              | <input type="checkbox"/>             |
| <b>8. OTHER INCENTIVES &amp; AMENITIES</b>        |   |                                                                                                                                                           |                                      |
| <b>8.1 Emergency ride home</b>                    |   |                                                                                                                                                           |                                      |
| <i>Commuter travel</i>                            |   |                                                                                                                                                           |                                      |
| BETTER                                            | ★ | 8.1.1 Provide emergency ride home service to non-driving commuters                                                                                        | <input type="checkbox"/>             |
| <b>8.2 Alternative work arrangements</b>          |   |                                                                                                                                                           |                                      |
| <i>Commuter travel</i>                            |   |                                                                                                                                                           |                                      |
| BASIC                                             | ★ | 8.2.1 Encourage flexible work hours                                                                                                                       | <input type="checkbox"/>             |
| BETTER                                            |   | 8.2.2 Encourage compressed workweeks                                                                                                                      | <input type="checkbox"/>             |
| BETTER                                            | ★ | 8.2.3 Encourage telework                                                                                                                                  | <input type="checkbox"/>             |
| <b>8.3 Local business travel options</b>          |   |                                                                                                                                                           |                                      |
| <i>Commuter travel</i>                            |   |                                                                                                                                                           |                                      |
| BASIC                                             | ★ | 8.3.1 Provide local business travel options that minimize the need for employees to bring a personal car to work                                          | <input type="checkbox"/>             |
| <b>8.4 Commuter incentives</b>                    |   |                                                                                                                                                           |                                      |
| <i>Commuter travel</i>                            |   |                                                                                                                                                           |                                      |
| BETTER                                            |   | 8.4.1 Offer employees a taxable, mode-neutral commuting allowance                                                                                         | <input type="checkbox"/>             |
| <b>8.5 On-site amenities</b>                      |   |                                                                                                                                                           |                                      |
| <i>Commuter travel</i>                            |   |                                                                                                                                                           |                                      |
| BETTER                                            |   | 8.5.1 Provide on-site amenities/services to minimize mid-day or mid-commute errands                                                                       | <input type="checkbox"/>             |

**TDM Measures Checklist:**  
*Residential Developments (multi-family, condominium or subdivision)*

| <b>Legend</b> |                                                                                                                |
|---------------|----------------------------------------------------------------------------------------------------------------|
| <b>BASIC</b>  | The measure is generally feasible and effective, and in most cases would benefit the development and its users |
| <b>BETTER</b> | The measure could maximize support for users of sustainable modes, and optimize development performance        |
| <b>★</b>      | The measure is one of the most dependably effective tools to encourage the use of sustainable modes            |

| <b>TDM measures: <i>Residential developments</i></b>                |                                                                                                                                               | <b>Check if proposed &amp; add descriptions</b>         |
|---------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|
| <b>1. TDM PROGRAM MANAGEMENT</b>                                    |                                                                                                                                               |                                                         |
| <b>1.1 Program coordinator</b>                                      |                                                                                                                                               |                                                         |
| <b>BASIC</b> ★                                                      | 1.1.1 Designate an internal coordinator, or contract with an external coordinator                                                             | <input type="checkbox"/> Not Applicable to Subdivisions |
| <b>1.2 Travel surveys</b>                                           |                                                                                                                                               |                                                         |
| <b>BETTER</b>                                                       | 1.2.1 Conduct periodic surveys to identify travel-related behaviours, attitudes, challenges and solutions, and to track progress              | <input type="checkbox"/>                                |
| <b>2. WALKING AND CYCLING</b>                                       |                                                                                                                                               |                                                         |
| <b>2.1 Information on walking/cycling routes &amp; destinations</b> |                                                                                                                                               |                                                         |
| <b>BASIC</b>                                                        | 2.1.1 Display local area maps with walking/cycling access routes and key destinations at major entrances ( <i>multi-family, condominium</i> ) | <input type="checkbox"/> Not Applicable to Subdivisions |
| <b>2.2 Bicycle skills training</b>                                  |                                                                                                                                               |                                                         |
| <b>BETTER</b>                                                       | 2.2.1 Offer on-site cycling courses for residents, or subsidize off-site courses                                                              | <input type="checkbox"/>                                |

| TDM measures: <i>Residential developments</i>   |                                                                                                                                                  | Check if proposed & add descriptions                    |
|-------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|
| <b>3. TRANSIT</b>                               |                                                                                                                                                  |                                                         |
| <b>3.1 Transit information</b>                  |                                                                                                                                                  |                                                         |
| BASIC                                           | 3.1.1 Display relevant transit schedules and route maps at entrances ( <i>multi-family, condominium</i> )                                        | <input type="checkbox"/> Not Applicable to Subdivisions |
| BETTER                                          | 3.1.2 Provide real-time arrival information display at entrances ( <i>multi-family, condominium</i> )                                            | <input type="checkbox"/> Not Applicable to Subdivisions |
| <b>3.2 Transit fare incentives</b>              |                                                                                                                                                  |                                                         |
| BASIC ★                                         | 3.2.1 Offer PRESTO cards preloaded with one monthly transit pass on residence purchase/move-in, to encourage residents to use transit            | <input type="checkbox"/>                                |
| BETTER                                          | 3.2.2 Offer at least one year of free monthly transit passes on residence purchase/move-in                                                       | <input type="checkbox"/>                                |
| <b>3.3 Enhanced public transit service</b>      |                                                                                                                                                  |                                                         |
| BETTER ★                                        | 3.3.1 Contract with OC Transpo to provide early transit services until regular services are warranted by occupancy levels ( <i>subdivision</i> ) | <input type="checkbox"/>                                |
| <b>3.4 Private transit service</b>              |                                                                                                                                                  |                                                         |
| BETTER                                          | 3.4.1 Provide shuttle service for seniors homes or lifestyle communities (e.g. scheduled mall or supermarket runs)                               | <input type="checkbox"/> Not Applicable to Subdivisions |
| <b>4. CARSHARING &amp; BIKESHARING</b>          |                                                                                                                                                  |                                                         |
| <b>4.1 Bikeshare stations &amp; memberships</b> |                                                                                                                                                  |                                                         |
| BETTER                                          | 4.1.1 Contract with provider to install on-site bikeshare station ( <i>multi-family</i> )                                                        | <input type="checkbox"/> Not Applicable to Subdivisions |
| BETTER                                          | 4.1.2 Provide residents with bikeshare memberships, either free or subsidized ( <i>multi-family</i> )                                            | <input type="checkbox"/> Not Applicable to Subdivisions |
| <b>4.2 Carshare vehicles &amp; memberships</b>  |                                                                                                                                                  |                                                         |
| BETTER                                          | 4.2.1 Contract with provider to install on-site carshare vehicles and promote their use by residents                                             | <input type="checkbox"/> Not Applicable to Subdivisions |
| BETTER                                          | 4.2.2 Provide residents with carshare memberships, either free or subsidized                                                                     | <input type="checkbox"/> Not Applicable to Subdivisions |
| <b>5. PARKING</b>                               |                                                                                                                                                  |                                                         |
| <b>5.1 Priced parking</b>                       |                                                                                                                                                  |                                                         |
| BASIC ★                                         | 5.1.1 Unbundle parking cost from purchase price ( <i>condominium</i> )                                                                           | <input type="checkbox"/> Not Applicable to Subdivisions |
| BASIC ★                                         | 5.1.2 Unbundle parking cost from monthly rent ( <i>multi-family</i> )                                                                            | <input type="checkbox"/> Not Applicable to Subdivisions |

| TDM measures: <i>Residential developments</i> |                                                                               | Check if proposed & add descriptions |
|-----------------------------------------------|-------------------------------------------------------------------------------|--------------------------------------|
| <b>6. TDM MARKETING &amp; COMMUNICATIONS</b>  |                                                                               |                                      |
| <b>6.1 Multimodal travel information</b>      |                                                                               |                                      |
| <b>BASIC</b> ★                                | 6.1.1 Provide a multimodal travel option information package to new residents | <input type="checkbox"/>             |
| <b>6.2 Personalized trip planning</b>         |                                                                               |                                      |
| <b>BETTER</b> ★                               | 6.2.1 Offer personalized trip planning to new residents                       | <input type="checkbox"/>             |

## Appendix H – MMLOS Analyses

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Multi-Modal Level of Service - Intersections Form

Consultant  
Scenario  
Comments

IBI Group

Existing & Future

Project  
Date

136974

2022-07-26

| INTERSECTIONS            |                                                                           | Limebank & Spratt (Existing)      |                                   |                                   |                                   | Spratt & Urbandale Plaza (Existing) |                             |                                   |                         | Spratt & Urbandal Plaza (Future) |                             |                                   |                             | Leitrim & Limebank (Existing)     |                                   |                                   |                                   | Realigned Leitrim & Limebank (Future) |                                   |                                   |                                   |
|--------------------------|---------------------------------------------------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-------------------------------------|-----------------------------|-----------------------------------|-------------------------|----------------------------------|-----------------------------|-----------------------------------|-----------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|---------------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| Crossing Side            |                                                                           | NORTH                             | SOUTH                             | EAST                              | WEST                              | NORTH                               | SOUTH                       | EAST                              | WEST                    | NORTH                            | SOUTH                       | EAST                              | WEST                        | NORTH                             | SOUTH                             | EAST                              | WEST                              | NORTH                                 | SOUTH                             | EAST                              | WEST                              |
| Pedestrian               | Lanes                                                                     | 10+                               | 10+                               | 10+                               | 10+                               |                                     | 4                           | 7                                 | 6                       | 4                                | 4                           | 7                                 | 7                           | 10+                               | 10+                               | 10+                               | 10+                               | 8                                     | 8                                 | 7                                 | 7                                 |
|                          | Median                                                                    | No Median - 2.4 m                 | No Median - 2.4 m                 | No Median - 2.4 m                 | No Median - 2.4 m                 |                                     | No Median - 2.4 m           | No Median - 2.4 m                 | No Median - 2.4 m       | No Median - 2.4 m                | No Median - 2.4 m           | No Median - 2.4 m                 | No Median - 2.4 m           | No Median - 2.4 m                 | No Median - 2.4 m                 | No Median - 2.4 m                 | No Median - 2.4 m                 | No Median - 2.4 m                     | No Median - 2.4 m                 | No Median - 2.4 m                 | No Median - 2.4 m                 |
|                          | Conflicting Left Turns                                                    | Protected                         | Protected                         | Protected                         | Protected                         |                                     | Permissive                  | No left turn / Prohib.            | Permissive              | Permissive                       | Permissive                  | Permissive                        | Permissive                  | Protected                         | Protected                         | Protected                         | Protected                         | Protected                             | Protected                         | Protected/ Permissive             | Protected/ Permissive             |
|                          | Conflicting Right Turns                                                   | Permissive or yield control       | Permissive or yield control       | Permissive or yield control       | Permissive or yield control       |                                     | Permissive or yield control | Permissive or yield control       | No right turn           | Permissive or yield control      | Permissive or yield control | Permissive or yield control       | Permissive or yield control | Permissive or yield control       | Permissive or yield control       | Permissive or yield control       | Permissive or yield control       | Permissive or yield control           | Permissive or yield control       | Permissive or yield control       | Permissive or yield control       |
|                          | Right Turns on Red (RTor) ?                                               | RTOR allowed                      | RTOR allowed                      | RTOR allowed                      | RTOR allowed                      |                                     | RTOR allowed                | RTOR prohibited                   | RTOR allowed            | RTOR allowed                     | RTOR allowed                | RTOR allowed                      | RTOR allowed                | RTOR allowed                      | RTOR allowed                      | RTOR allowed                      | RTOR allowed                      | RTOR allowed                          | RTOR allowed                      | RTOR allowed                      | RTOR allowed                      |
|                          | Ped Signal Leading Interval?                                              | No                                | No                                | No                                | No                                |                                     | No                          | No                                | No                      | No                               | No                          | No                                | No                          | No                                | No                                | No                                | No                                | No                                    | No                                | No                                | No                                |
|                          | Right Turn Channel                                                        | Conv'tl without Receiving Lane    | Conv'tl without Receiving Lane    | Conv'tl without Receiving Lane    | Conv'tl without Receiving Lane    |                                     | No Channel                  | No Right Turn                     | No Channel              | No Channel                       | No Channel                  | No Channel                        | No Channel                  | Conv'tl without Receiving Lane    | Conv'tl without Receiving Lane    | Conv'tl without Receiving Lane    | Conv'tl without Receiving Lane    | No Channel                            | No Channel                        | No Channel                        | No Channel                        |
|                          | Corner Radius                                                             | 10-15m                            | 15-25m                            | 10-15m                            | 15-25m                            |                                     | 5-10m                       | No Right Turn                     | 5-10m                   | 5-10m                            | 5-10m                       | 5-10m                             | 5-10m                       | >25m                              | 15-25m                            | 15-25m                            | >25m                              | 10-15m                                | 10-15m                            | 10-15m                            | 10-15m                            |
|                          | Crosswalk Type                                                            | Std transverse markings           | Std transverse markings           | Std transverse markings           | Std transverse markings           |                                     | Std transverse markings     | Std transverse markings           | Std transverse markings | Std transverse markings          | Std transverse markings     | Std transverse markings           | Std transverse markings     | Std transverse markings           | Std transverse markings           | Std transverse markings           | Std transverse markings           | Std transverse markings               | Std transverse markings           | Std transverse markings           | Std transverse markings           |
|                          | PETSI Score                                                               | -33                               | -35                               | -33                               | -35                               |                                     | 54                          | 25                                | 26                      | 54                               | 54                          | 5                                 | 5                           | -36                               | -35                               | -35                               | -36                               | -4                                    | -4                                | 4                                 | 4                                 |
|                          | Ped. Exposure to Traffic LoS                                              | #N/A                              | #N/A                              | #N/A                              | #N/A                              | -                                   | D                           | F                                 | F                       | D                                | D                           | F                                 | F                           | #N/A                              | #N/A                              | #N/A                              | #N/A                              | F                                     | F                                 | F                                 | F                                 |
|                          | Cycle Length                                                              | 171                               | 171                               | 121                               | 171                               |                                     | 80                          | 80                                | 80                      | 80                               | 80                          | 80                                | 80                          | 136                               | 131                               | 136                               | 136                               | 130                                   | 130                               | 130                               | 130                               |
| Effective Walk Time      | 0                                                                         | 0                                 | 5                                 | 0                                 |                                   | 32                                  | 7                           | 7                                 | 32                      | 32                               | 7                           | 7                                 | 8                           | 3                                 | 31                                | 16                                | 7                                 | 7                                     | 28                                | 14                                |                                   |
| Average Pedestrian Delay | 86                                                                        | 86                                | 56                                | 86                                |                                   | 14                                  | 33                          | 33                                | 14                      | 14                               | 33                          | 33                                | 60                          | 63                                | 41                                | 53                                | 58                                | 58                                    | 40                                | 52                                |                                   |
| Pedestrian Delay LoS     | F                                                                         | F                                 | E                                 | F                                 | -                                 | B                                   | D                           | D                                 | B                       | B                                | D                           | D                                 | F                           | F                                 | E                                 | E                                 | E                                 | E                                     | E                                 | E                                 |                                   |
| Level of Service         | #N/A                                                                      | #N/A                              | #N/A                              | #N/A                              | -                                 | D                                   | F                           | F                                 | D                       | D                                | F                           | F                                 | #N/A                        | #N/A                              | #N/A                              | #N/A                              | F                                 | F                                     | F                                 | F                                 |                                   |
|                          |                                                                           | #N/A                              |                                   |                                   |                                   | F                                   |                             |                                   |                         | F                                |                             |                                   |                             | #N/A                              |                                   |                                   |                                   | F                                     |                                   |                                   |                                   |
| Approach From            |                                                                           | NORTH                             | SOUTH                             | EAST                              | WEST                              | NORTH                               | SOUTH                       | EAST                              | WEST                    | NORTH                            | SOUTH                       | EAST                              | WEST                        | NORTH                             | SOUTH                             | EAST                              | WEST                              | NORTH                                 | SOUTH                             | EAST                              | WEST                              |
| Bicycle                  | Bicycle Lane Arrangement on Approach                                      | Pocket Bike Lane                  | Pocket Bike Lane                  | Pocket Bike Lane                  | Pocket Bike Lane                  |                                     | Mixed Traffic               | Curb Bike Lane, Cycletrack or MUP | Mixed Traffic           | Mixed Traffic                    | Mixed Traffic               | Curb Bike Lane, Cycletrack or MUP | Mixed Traffic               | Pocket Bike Lane                  | Pocket Bike Lane                  | Pocket Bike Lane                  | Pocket Bike Lane                  | Curb Bike Lane, Cycletrack or MUP     | Curb Bike Lane, Cycletrack or MUP | Curb Bike Lane, Cycletrack or MUP | Curb Bike Lane, Cycletrack or MUP |
|                          | IF Dedicated Right Turn Lane, THEN Right Turn Configuration, ELSE <blank> | > 50 m Introduced right turn lane | > 50 m Introduced right turn lane | > 50 m Introduced right turn lane | > 50 m Introduced right turn lane |                                     | ≤ 50 m                      | Not Applicable                    |                         | ≤ 50 m                           | ≤ 50 m                      | Not Applicable                    |                             | > 50 m Introduced right turn lane | > 50 m Introduced right turn lane | > 50 m Introduced right turn lane | > 50 m Introduced right turn lane | Not Applicable                        | Not Applicable                    | Not Applicable                    | Not Applicable                    |
|                          | Dedicated Right Turning Speed                                             | >25 to 30 km/h                    | >25 to 30 km/h                    | >25 to 30 km/h                    | >25 to 30 km/h                    |                                     | ≤ 25 km/h                   | Not Applicable                    | ≤ 25 km/h               | ≤ 25 km/h                        | ≤ 25 km/h                   | Not Applicable                    | ≤ 25 km/h                   | >25 to 30 km/h                    | >25 to 30 km/h                    | >25 to 30 km/h                    | >25 to 30 km/h                    | Not Applicable                        | Not Applicable                    | Not Applicable                    | Not Applicable                    |
|                          | Cyclist Through Movement                                                  | D                                 | D                                 | D                                 | D                                 | -                                   | D                           | Not Applicable                    |                         | D                                | D                           | Not Applicable                    |                             | D                                 | D                                 | D                                 | D                                 | Not Applicable                        | Not Applicable                    | Not Applicable                    | Not Applicable                    |
|                          | Separated or Mixed Traffic                                                | Separated                         | Separated                         | Separated                         | Separated                         | -                                   | Mixed Traffic               | Separated                         | Mixed Traffic           | Mixed Traffic                    | Mixed Traffic               | Separated                         | Mixed Traffic               | Separated                         | Separated                         | Separated                         | Separated                         | Separated                             | Separated                         | Separated                         | Separated                         |
|                          | Left Turn Approach                                                        | ≥ 2 lanes crossed                 | ≥ 2 lanes crossed                 | ≥ 2 lanes crossed                 | ≥ 2 lanes crossed                 |                                     | No lane crossed             | ≥ 2 lanes crossed                 |                         | ≥ 2 lanes crossed                | One lane crossed            | ≥ 2 lanes crossed                 | ≥ 2 lanes crossed           | ≥ 2 lanes crossed                 | ≥ 2 lanes crossed                 | ≥ 2 lanes crossed                 | ≥ 2 lanes crossed                 | 2-stage, LT box                       | 2-stage, LT box                   | 2-stage, LT box                   | 2-stage, LT box                   |
|                          | Operating Speed                                                           | ≥ 60 km/h                         | ≥ 60 km/h                         | ≥ 60 km/h                         | ≥ 60 km/h                         |                                     | > 40 to ≤ 50 km/h           | ≥ 60 km/h                         |                         | > 40 to ≤ 50 km/h                | > 40 to ≤ 50 km/h           | ≥ 60 km/h                         | ≥ 60 km/h                   | ≥ 60 km/h                         | ≥ 60 km/h                         | ≥ 60 km/h                         | ≥ 60 km/h                         | ≥ 60 km/h                             | ≥ 60 km/h                         | ≥ 60 km/h                         | ≥ 60 km/h                         |
|                          | Left Turning Cyclist                                                      | F                                 | F                                 | F                                 | F                                 | -                                   | B                           | F                                 | -                       | E                                | D                           | F                                 | F                           | F                                 | F                                 | F                                 | F                                 | A                                     | A                                 | A                                 | A                                 |
| Level of Service         | F                                                                         | F                                 | F                                 | F                                 | -                                 | D                                   | F                           | -                                 | E                       | D                                | F                           | F                                 | F                           | F                                 | F                                 | F                                 | A                                 | A                                     | A                                 | A                                 |                                   |
|                          |                                                                           | F                                 |                                   |                                   |                                   | F                                   |                             |                                   |                         | F                                |                             |                                   |                             | F                                 |                                   |                                   |                                   | A                                     |                                   |                                   |                                   |
| Transit                  | Average Signal Delay                                                      | ≤ 30 sec                          | ≤ 20 sec                          | ≤ 40 sec                          | ≤ 30 sec                          |                                     | ≤ 10 sec                    |                                   | ≤ 10 sec                | ≤ 10 sec                         |                             | ≤ 10 sec                          | ≤ 10 sec                    | ≤ 30 sec                          | ≤ 40 sec                          | > 40 sec                          | ≤ 40 sec                          | ≤ 20 sec                              | ≤ 20 sec                          | > 40 sec                          | > 40 sec                          |
|                          | Level of Service                                                          | D                                 | C                                 | E                                 | D                                 | -                                   | -                           | B                                 | B                       | -                                | -                           | B                                 | B                           | D                                 | E                                 | F                                 | E                                 | C                                     | C                                 | F                                 | F                                 |
|                          |                                                                           | E                                 |                                   |                                   |                                   | B                                   |                             |                                   |                         | B                                |                             |                                   |                             | F                                 |                                   |                                   |                                   | F                                     |                                   |                                   |                                   |
| Truck                    | Effective Corner Radius                                                   | > 15 m                            | > 15 m                            | > 15 m                            | > 15 m                            |                                     | 10 - 15 m                   |                                   | < 10 m                  | 10 - 15 m                        | 10 - 15 m                   | 10 - 15 m                         | 10 - 15 m                   | > 15 m                            | > 15 m                            | > 15 m                            | > 15 m                            | 10 - 15 m                             | 10 - 15 m                         | 10 - 15 m                         | 10 - 15 m                         |
|                          | Number of Receiving Lanes on Departure from Intersection                  | ≥ 2                               | ≥ 2                               | ≥ 2                               | ≥ 2                               |                                     | ≥ 2                         |                                   | 1                       | ≥ 2                              | ≥ 2                         | 1                                 | 1                           | ≥ 2                               | ≥ 2                               | ≥ 2                               | ≥ 2                               | ≥ 2                                   | ≥ 2                               | ≥ 2                               | ≥ 2                               |
|                          | Level of Service                                                          | A                                 | A                                 | A                                 | A                                 | -                                   | B                           | -                                 | F                       | B                                | B                           | E                                 | E                           | A                                 | A                                 | A                                 | A                                 | B                                     | B                                 | B                                 | B                                 |
|                          |                                                                           | A                                 |                                   |                                   |                                   | F                                   |                             |                                   |                         | E                                |                             |                                   |                             | A                                 |                                   |                                   |                                   | B                                     |                                   |                                   |                                   |

Multi-Modal Level of Service - Segments Form

|            |           |         |            |
|------------|-----------|---------|------------|
| Consultant | IBI Group | Project | 136974     |
| Scenario   | Existing  | Date    | 2022-07-26 |
| Comments   |           |         |            |
|            |           |         |            |

| SEGMENTS   |                                           | Limebank Road | Section               | Section | Section |
|------------|-------------------------------------------|---------------|-----------------------|---------|---------|
|            |                                           |               | 1                     | 2       | 3       |
| Pedestrian | Sidewalk Width                            | -             | ≥ 2 m                 |         |         |
|            | Boulevard Width                           |               | 0.5 - 2 m             |         |         |
|            | Avg Daily Curb Lane Traffic Volume        |               | ≤ 3000                |         |         |
|            | Operating Speed                           |               | > 60 km/h             |         |         |
|            | On-Street Parking                         |               | no                    |         |         |
|            | Exposure to Traffic PLoS                  |               | B                     | -       | -       |
|            | Effective Sidewalk Width                  |               |                       |         |         |
|            | Pedestrian Volume                         |               |                       |         |         |
| Bicycle    | Crowding PLoS                             | -             | -                     | -       | -       |
|            | Level of Service                          |               | -                     | -       | -       |
|            | Type of Cycling Facility                  |               | Curbside Bike Lane    |         |         |
|            | Number of Travel Lanes                    |               | 2 ea. dir. (w median) |         |         |
|            | Operating Speed                           |               | > 70 km/h             |         |         |
|            | # of Lanes & Operating Speed LoS          |               | E                     | -       | -       |
|            | Bike Lane (+ Parking Lane) Width          |               | ≥ 1.8 m               |         |         |
|            | Bike Lane Width LoS                       |               | A                     | -       | -       |
|            | Bike Lane Blockages                       |               | Rare                  |         |         |
|            | Blockage LoS                              |               | A                     | -       | -       |
|            | Median Refuge Width (no median = < 1.8 m) |               |                       |         |         |
|            | No. of Lanes at Unsignalized Crossing     |               |                       |         |         |
| Transit    | Sidestreet Operating Speed                | D             |                       |         |         |
|            | Unsignalized Crossing - Lowest LoS        |               | -                     | -       | -       |
|            | Level of Service                          |               | -                     | -       | -       |
| Truck      | Facility Type                             | D             | Mixed Traffic         |         |         |
|            | Friction or Ratio Transit:Posted Speed    |               | Vt/Vp ≥ 0.8           |         |         |
|            | Level of Service                          |               | D                     | -       | -       |
| Truck      | Truck Lane Width                          | A             | ≤ 3.5 m               |         |         |
|            | Travel Lanes per Direction                |               | > 1                   |         |         |
|            | Level of Service                          |               | A                     | -       | -       |

Multi-Modal Level of Service - Segments Form

|            |           |         |            |
|------------|-----------|---------|------------|
| Consultant | IBI Group | Project | 136974     |
| Scenario   | Existing  | Date    | 2022-07-26 |
| Comments   |           |         |            |

| SEGMENTS   |                                           | Spratt Road | Section 1             | Section 2       | Section 3 |
|------------|-------------------------------------------|-------------|-----------------------|-----------------|-----------|
| Pedestrian | Sidewalk Width                            | -           | ≥ 2 m                 | ≥ 2 m           |           |
|            | Boulevard Width                           |             | 0.5 - 2 m             | > 2 m           |           |
|            | Avg Daily Curb Lane Traffic Volume        |             | ≤ 3000                | ≤ 3000          |           |
|            | Operating Speed                           |             | > 60 km/h             | > 60 km/h       |           |
|            | On-Street Parking                         |             | no                    | no              |           |
|            | Exposure to Traffic PLoS                  |             | B                     | B               | -         |
|            | Effective Sidewalk Width                  |             |                       |                 |           |
|            | Pedestrian Volume                         |             |                       |                 |           |
|            | Crowding PLoS                             |             | -                     | -               | -         |
| Bicycle    | Level of Service                          |             | -                     | -               | -         |
|            | Type of Cycling Facility                  | -           | Curbside Bike Lane    | Mixed Traffic   |           |
|            | Number of Travel Lanes                    |             | 2 ea. dir. (w median) | 4-5 lanes total |           |
|            | Operating Speed                           |             | >50 to 70 km/h        | ≥ 60 km/h       |           |
|            | # of Lanes & Operating Speed LoS          |             | C                     | F               | -         |
|            | Bike Lane (+ Parking Lane) Width          |             | ≥ 1.8 m               |                 |           |
|            | Bike Lane Width LoS                       |             | A                     | -               | -         |
|            | Bike Lane Blockages                       |             | Rare                  |                 |           |
|            | Blockage LoS                              |             | A                     | -               | -         |
|            | Median Refuge Width (no median = < 1.8 m) |             |                       |                 |           |
|            | No. of Lanes at Unsignalized Crossing     |             |                       |                 |           |
|            | Sidestreet Operating Speed                |             |                       |                 |           |
| Transit    | Unsignalized Crossing - Lowest LoS        |             | -                     | -               | -         |
|            | Level of Service                          |             | -                     | -               | -         |
|            | Facility Type                             | D           | Mixed Traffic         | Mixed Traffic   |           |
| Truck      | Friction or Ratio Transit:Posted Speed    |             | Vt/Vp ≥ 0.8           | Vt/Vp ≥ 0.8     |           |
|            | Level of Service                          |             | D                     | D               | -         |
|            | Truck Lane Width                          | A           | ≤ 3.5 m               | ≤ 3.5 m         |           |
| Truck      | Travel Lanes per Direction                |             | > 1                   | > 1             |           |
|            | Level of Service                          |             | A                     | A               | -         |

# Multi-Modal Level of Service - Segments Form

Consultant  
Scenario  
Comments

|                  |
|------------------|
| <b>IBI Group</b> |
| <b>Future</b>    |
|                  |
|                  |

Project  
Date

|                   |
|-------------------|
| <b>136974</b>     |
| <b>2022-07-25</b> |
|                   |
|                   |

| SEGMENTS   |                                           | Realigned<br>Leitrim<br>Road | Section         | Section | Section |
|------------|-------------------------------------------|------------------------------|-----------------|---------|---------|
|            |                                           |                              | 1               | 2       | 3       |
| Pedestrian | Sidewalk Width                            | -                            | no sidewalk     |         |         |
|            | Boulevard Width                           |                              | n/a             |         |         |
|            | Avg Daily Curb Lane Traffic Volume        |                              | > 3000          |         |         |
|            | Operating Speed                           |                              | > 60 km/h       |         |         |
|            | On-Street Parking                         |                              | no              |         |         |
|            | Exposure to Traffic PLoS                  |                              | F               | -       | -       |
|            | Effective Sidewalk Width                  |                              |                 |         |         |
|            | Pedestrian Volume                         |                              |                 |         |         |
|            | Crowding PLoS                             |                              | -               | -       | -       |
|            | Level of Service                          |                              | -               | -       | -       |
| Bicycle    | Type of Cycling Facility                  | -                            | Mixed Traffic   |         |         |
|            | Number of Travel Lanes                    |                              | 2-3 lanes total |         |         |
|            | Operating Speed                           |                              | ≥ 60 km/h       |         |         |
|            | # of Lanes & Operating Speed LoS          |                              | F               | -       | -       |
|            | Bike Lane (+ Parking Lane) Width          |                              |                 |         |         |
|            | Bike Lane Width LoS                       |                              | -               | -       | -       |
|            | Bike Lane Blockages                       |                              |                 |         |         |
|            | Blockage LoS                              |                              | -               | -       | -       |
|            | Median Refuge Width (no median = < 1.8 m) |                              |                 |         |         |
|            | No. of Lanes at Unsignalized Crossing     |                              |                 |         |         |
|            | Sidestreet Operating Speed                |                              |                 |         |         |
|            | Unsignalized Crossing - Lowest LoS        |                              | -               | -       | -       |
|            | Level of Service                          |                              | -               | -       | -       |
| Transit    | Facility Type                             | D                            | Mixed Traffic   |         |         |
|            | Friction or Ratio Transit:Posted Speed    |                              | Vt/Vp ≥ 0.8     |         |         |
|            | Level of Service                          |                              | D               | -       | -       |
| Truck      | Truck Lane Width                          | C                            | ≤ 3.5 m         |         |         |
|            | Travel Lanes per Direction                |                              | 1               |         |         |
|            | Level of Service                          |                              | C               | -       | -       |

## Appendix I – Intersection Control Warrants



# OTM BOOK 12\* - TRAFFIC SIGNAL WARRANT

**Project:** Riverside South Employment Lands & Blocks 13, 14 **Date:** July 25, 2022

**Project #:** 136974

**Location:** Limebank Road at Realigned Leitrim Road

**Orientation:** (Major Roadway) North/South (Minor Roadway) East/West

**Municipality:** City of Ottawa **Scenario:** Future (2031) Background Traffic

## Justification 1 - Minimum Vehicle Volume

| WARRANT                             | MINIMUM REQUIREMENT |             |                   |                     | COMPLIANCE   |              |              |              |              |              |              |              | SECTIONAL PERCENT |
|-------------------------------------|---------------------|-------------|-------------------|---------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------------|
|                                     | FREE FLOW           | RESTR. FLOW | ADJUST. FREE FLOW | ADJUST. RESTR. FLOW | 7:00 AM      | 8:00 AM      | 9:00 AM      | 10:00 AM     | 3:00 PM      | 4:00 PM      | 5:00 PM      | 6:00 PM      |                   |
| A. Vehicle volumes, all approaches  | 480                 | 720         | 720               | 1080                | 2498<br>100% | 1249<br>100% | 1249<br>100% | 1249<br>100% | 2424<br>100% | 1212<br>100% | 1212<br>100% | 1212<br>100% | 100%              |
| B. Vehicle volume along minor roads | 120                 | 170         | 216               | 306                 | 20<br>9%     | 10<br>5%     | 10<br>5%     | 10<br>5%     | 54<br>25%    | 27<br>12%    | 27<br>12%    | 27<br>12%    | 11%               |

## Justification 2 - Delay to Cross Traffic

| WARRANT                                                                    | MINIMUM REQUIREMENT |             |                   |                     | COMPLIANCE   |              |              |              |              |              |              |              | SECTIONAL PERCENT |
|----------------------------------------------------------------------------|---------------------|-------------|-------------------|---------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------------|
|                                                                            | FREE FLOW           | RESTR. FLOW | ADJUST. FREE FLOW | ADJUST. RESTR. FLOW | 7:00 AM      | 8:00 AM      | 9:00 AM      | 10:00 AM     | 3:00 PM      | 4:00 PM      | 5:00 PM      | 6:00 PM      |                   |
| A. Vehicle volumes, along artery                                           | 480                 | 720         | 720               | 1080                | 2478<br>100% | 1239<br>100% | 1239<br>100% | 1239<br>100% | 2371<br>100% | 1185<br>100% | 1185<br>100% | 1185<br>100% | 100%              |
| B. Combined vehicle and pedestrian volume crossing artery from minor roads | 50                  | 70          | 60                | 84                  | 15<br>25%    | 7<br>12%     | 7<br>12%     | 7<br>12%     | 46<br>77%    | 23<br>38%    | 23<br>38%    | 23<br>38%    | 32%               |

## Justification 3 - Volume/Delay Combination

| JUSTIFICATION                              | SATISFIED TO 80% OR MORE? | BOTH SATISFIED TO 80% OR MORE? |
|--------------------------------------------|---------------------------|--------------------------------|
| Justification 1 - Minimum Vehicular Volume | N/A                       | N/A                            |
| Justification 2 - Delay to Cross Traffic   | N/A                       |                                |

## Justification 7 - Projected Volumes

| WARRANT                     | DESCRIPTION                                                                               | MINIMUM REQUIREMENT |                 |                    |                          | COMPLIANCE |      |          |
|-----------------------------|-------------------------------------------------------------------------------------------|---------------------|-----------------|--------------------|--------------------------|------------|------|----------|
|                             |                                                                                           | FREE FLOW           | RESTRICTED FLOW | ADJUSTED FREE FLOW | ADJUSTED RESTRICTED FLOW | SECTIONAL  |      | ENTIRE % |
|                             |                                                                                           |                     |                 |                    |                          | AHV        | %    |          |
| 1. MINIMUM VEHICULAR VOLUME | A. Vehicle volumes, all approaches (Average Hour)                                         | 480                 | 720             | 900                | 1350                     | 1231       | 100% | 7%       |
|                             | B. Vehicle volume along minor roads (Average Hour)                                        | 120                 | 170             | 270                | 383                      | 18         | 7%   |          |
| 2. DELAY TO CROSS TRAFFIC   | A. Vehicle volumes, along artery (Average Hour)                                           | 480                 | 720             | 900                | 1350                     | 1213       | 100% | 20%      |
|                             | B. Combined vehicle and pedestrian volume crossing artery from minor roads (Average Hour) | 50                  | 75              | 75                 | 113                      | 15         | 20%  |          |

### Projected Traffic Volumes:

Average Hourly Volume (AHV) Equation:  $AHV = (amPHV + pmPHV)/4$

AM Peak Hour Volumes

|   |     |     |      |
|---|-----|-----|------|
| 0 | 533 | 113 | 5    |
| ↙ | ↓   | ↘   | ←    |
| 0 | →   | 0   | 15   |
| 0 | ↘   | 0   | ↑    |
| 0 | ↙   | 0   | 1833 |
| 0 | ↘   | 0   | 0    |

PM Peak Hour Volumes

|   |      |    |     |
|---|------|----|-----|
| 0 | 1672 | 56 | 8   |
| ↙ | ↓    | ↘  | ←   |
| 0 | →    | 0  | 46  |
| 0 | ↘    | 0  | ↑   |
| 0 | ↙    | 0  | 642 |
| 0 | ↘    | 0  | 0   |

Average Hourly Volumes (AHV)

|   |     |    |     |
|---|-----|----|-----|
| 0 | 551 | 42 | 3   |
| ↙ | ↓   | ↘  | ←   |
| 0 | →   | 0  | 15  |
| 0 | ↘   | 0  | ↑   |
| 0 | ↙   | 0  | 619 |
| 0 | ↘   | 0  | 0   |



#### Eight Hour Traffic Volumes\*\*:

| Hour     | Major Road |      |     |     |      |     | Minor Road |     |     |     |     |     | Ped* |
|----------|------------|------|-----|-----|------|-----|------------|-----|-----|-----|-----|-----|------|
|          | NBL        | NBT  | NBR | SBL | SBT  | SBR | EBL        | EBT | EBR | WBL | WBT | WBR |      |
| 7:00 AM  | 0          | 1833 | 0   | 113 | 533  | 0   | 0          | 0   | 0   | 15  | 0   | 5   | 0    |
| 8:00 AM  | 0          | 916  | 0   | 56  | 266  | 0   | 0          | 0   | 0   | 7   | 0   | 3   | 0    |
| 9:00 AM  | 0          | 916  | 0   | 56  | 266  | 0   | 0          | 0   | 0   | 7   | 0   | 3   | 0    |
| 10:00 AM | 0          | 916  | 0   | 56  | 266  | 0   | 0          | 0   | 0   | 7   | 0   | 3   | 0    |
| 3:00 PM  | 0          | 642  | 0   | 56  | 1672 | 0   | 0          | 0   | 0   | 46  | 0   | 8   | 0    |
| 4:00 PM  | 0          | 321  | 0   | 28  | 836  | 0   | 0          | 0   | 0   | 23  | 0   | 4   | 0    |
| 5:00 PM  | 0          | 321  | 0   | 28  | 836  | 0   | 0          | 0   | 0   | 23  | 0   | 4   | 0    |
| 6:00 PM  | 0          | 321  | 0   | 28  | 836  | 0   | 0          | 0   | 0   | 23  | 0   | 4   | 0    |

\* Number of pedestrians crossing the major road

\*\* These are projected 8-hour traffic volumes.

#### Notes:

- Vehicle volume warrant (1A) and (2A) for intersections of roadways having two or more moving lanes in one direction should be 25% higher than the values given above.
- Warrant values for free flow apply when the 85th percentile speed of artery traffic equals or exceeds 70 km/h or when the intersection lies within the built-up area of an isolated community having a population of less than 10,000. Warrant values for restricted flow apply to large urban communities when the 85th percentile speed of artery traffic does not exceed 70 km/h.
- The lowest sectional percentage governs the entire warrant.
- For "T" intersections the warrant values for the minor road should be increased by 50% (Warrant 1B only).
- All flow values for Justification 1 and 2 are to be increased by 20% in the case of new intersections, Justification 3 is to only be used for existing intersections and all flow values for Warrant 1 and Warrant 2 of Justification 7 are to be increased by 20% for existing intersections and by 50% in the case of new intersections.
- The crossing volumes are defined as the sum of:
  - Left-turns from both minor road approaches.
  - The heaviest through volume from the minor road.
  - 50% of the heavier left turn movement from major road when both of the following are met:
    - the left-turn volume >120 vph
    - the left-turn volume plus the opposing volume >720 vph
  - Pedestrians crossing the main road.

2+ Lanes per Direction

Free Flow

3-legged Intersection

New Intersection

**CONCLUSION:** The intersection does NOT meet the minimum warrants for traffic control signals.

\* "Ontario Traffic Manual, Book 12 (March 2012)", Ontario Ministry of Transportation.



# OTM BOOK 12\* - TRAFFIC SIGNAL WARRANT

**Project:** Riverside South Employment Lands & Blocks 13, 14 **Date:** July 25, 2022

**Project #:** 136974

**Location:** Limebank Road at Realigned Leitrim Road

**Orientation:** (Major Roadway) North/South (Minor Roadway) East/West

**Municipality:** City of Ottawa **Scenario:** Future (2031) Total Traffic

## Justification 1 - Minimum Vehicle Volume

| WARRANT                             | MINIMUM REQUIREMENT |             |                   |                     | COMPLIANCE   |              |              |              |              |              |              |              | SECTIONAL PERCENT |
|-------------------------------------|---------------------|-------------|-------------------|---------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------------|
|                                     | FREE FLOW           | RESTR. FLOW | ADJUST. FREE FLOW | ADJUST. RESTR. FLOW | 7:00 AM      | 8:00 AM      | 9:00 AM      | 10:00 AM     | 3:00 PM      | 4:00 PM      | 5:00 PM      | 6:00 PM      |                   |
| A. Vehicle volumes, all approaches  | 480                 | 720         | 720               | 1080                | 3259<br>100% | 1630<br>100% | 1630<br>100% | 1630<br>100% | 3132<br>100% | 1566<br>100% | 1566<br>100% | 1566<br>100% | 100%              |
| B. Vehicle volume along minor roads | 120                 | 170         | 144               | 204                 | 126<br>87%   | 63<br>44%    | 63<br>44%    | 63<br>44%    | 616<br>100%  | 308<br>100%  | 308<br>100%  | 308<br>100%  | 77%               |

## Justification 2 - Delay to Cross Traffic

| WARRANT                                                                    | MINIMUM REQUIREMENT |             |                   |                     | COMPLIANCE   |              |              |              |              |              |              |              | SECTIONAL PERCENT |
|----------------------------------------------------------------------------|---------------------|-------------|-------------------|---------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------------|
|                                                                            | FREE FLOW           | RESTR. FLOW | ADJUST. FREE FLOW | ADJUST. RESTR. FLOW | 7:00 AM      | 8:00 AM      | 9:00 AM      | 10:00 AM     | 3:00 PM      | 4:00 PM      | 5:00 PM      | 6:00 PM      |                   |
| A. Vehicle volumes, along artery                                           | 480                 | 720         | 720               | 1080                | 3133<br>100% | 1567<br>100% | 1567<br>100% | 1567<br>100% | 2516<br>100% | 1258<br>100% | 1258<br>100% | 1258<br>100% | 100%              |
| B. Combined vehicle and pedestrian volume crossing artery from minor roads | 50                  | 70          | 60                | 84                  | 196<br>100%  | 42<br>70%    | 42<br>70%    | 42<br>70%    | 415<br>100%  | 207<br>100%  | 207<br>100%  | 207<br>100%  | 89%               |

## Justification 3 - Volume/Delay Combination

| JUSTIFICATION                              | SATISFIED TO 80% OR MORE? | BOTH SATISFIED TO 80% OR MORE? |
|--------------------------------------------|---------------------------|--------------------------------|
| Justification 1 - Minimum Vehicular Volume | N/A                       | N/A                            |
| Justification 2 - Delay to Cross Traffic   | N/A                       |                                |

## Justification 7 - Projected Volumes

| WARRANT                     | DESCRIPTION                                                                               | MINIMUM REQUIREMENT |                 |                    |                          | COMPLIANCE |      |          |
|-----------------------------|-------------------------------------------------------------------------------------------|---------------------|-----------------|--------------------|--------------------------|------------|------|----------|
|                             |                                                                                           | FREE FLOW           | RESTRICTED FLOW | ADJUSTED FREE FLOW | ADJUSTED RESTRICTED FLOW | SECTIONAL  |      | ENTIRE % |
|                             |                                                                                           |                     |                 |                    |                          | AHV        | %    |          |
| 1. MINIMUM VEHICULAR VOLUME | A. Vehicle volumes, all approaches (Average Hour)                                         | 480                 | 720             | 900                | 1350                     | 1597       | 100% | 100%     |
|                             | B. Vehicle volume along minor roads (Average Hour)                                        | 120                 | 170             | 180                | 255                      | 185        | 100% |          |
| 2. DELAY TO CROSS TRAFFIC   | A. Vehicle volumes, along artery (Average Hour)                                           | 480                 | 720             | 900                | 1350                     | 1412       | 100% | 100%     |
|                             | B. Combined vehicle and pedestrian volume crossing artery from minor roads (Average Hour) | 50                  | 75              | 75                 | 113                      | 125        | 100% |          |

### Projected Traffic Volumes:

Average Hourly Volume (AHV) Equation:  $AHV = (amPHV + pmPHV)/4$

| AM Peak Hour Volumes |     |     |      |    |
|----------------------|-----|-----|------|----|
| 426                  | 534 | 113 | ↖    | 5  |
| ↙                    | ↓   | ↘   | ↖    | 0  |
| ↙                    | ↓   | ↘   | ↖    | 15 |
| 70                   | ↗   | ↖   | ↑    | ↗  |
| 0                    | →   | 224 | 1836 | 0  |
| 36                   | ↘   |     |      |    |

| PM Peak Hour Volumes |      |    |     |    |
|----------------------|------|----|-----|----|
| 92                   | 1675 | 56 | ↖   | 8  |
| ↙                    | ↓    | ↘  | ↖   | 0  |
| ↙                    | ↓    | ↘  | ↖   | 46 |
| 369                  | ↗    | ↖  | ↑   | ↗  |
| 0                    | →    | 48 | 644 | 0  |
| 193                  | ↘    |    |     |    |

| Average Hourly Volumes (AHV) |     |    |     |    |
|------------------------------|-----|----|-----|----|
| 130                          | 552 | 42 | ↖   | 3  |
| ↙                            | ↓   | ↘  | ↖   | 0  |
| ↙                            | ↓   | ↘  | ↖   | 15 |
| 110                          | ↗   | ↖  | ↑   | ↗  |
| 0                            | →   | 68 | 620 | 0  |
| 57                           | ↘   |    |     |    |



**Eight Hour Traffic Volumes\*\*:**

| Hour     | Major Road |      |     |     |      |     | Minor Road |     |     |     |     |     | Ped* |
|----------|------------|------|-----|-----|------|-----|------------|-----|-----|-----|-----|-----|------|
|          | NBL        | NBT  | NBR | SBL | SBT  | SBR | EBL        | EBT | EBR | WBL | WBT | WBR |      |
| 7:00 AM  | 224        | 1836 | 0   | 113 | 534  | 426 | 70         | 0   | 36  | 15  | 0   | 5   | 0    |
| 8:00 AM  | 112        | 918  | 0   | 56  | 267  | 213 | 35         | 0   | 18  | 7   | 0   | 3   | 0    |
| 9:00 AM  | 112        | 918  | 0   | 56  | 267  | 213 | 35         | 0   | 18  | 7   | 0   | 3   | 0    |
| 10:00 AM | 112        | 918  | 0   | 56  | 267  | 213 | 35         | 0   | 18  | 7   | 0   | 3   | 0    |
| 3:00 PM  | 48         | 644  | 0   | 56  | 1675 | 92  | 369        | 0   | 193 | 46  | 0   | 8   | 0    |
| 4:00 PM  | 24         | 322  | 0   | 28  | 838  | 46  | 184        | 0   | 97  | 23  | 0   | 4   | 0    |
| 5:00 PM  | 24         | 322  | 0   | 28  | 838  | 46  | 184        | 0   | 97  | 23  | 0   | 4   | 0    |
| 6:00 PM  | 24         | 322  | 0   | 28  | 838  | 46  | 184        | 0   | 97  | 23  | 0   | 4   | 0    |

\* Number of pedestrians crossing the major road

\*\* These are projected 8-hour traffic volumes.

**Notes:**

- Vehicle volume warrant (1A) and (2A) for intersections of roadways having two or more moving lanes in one direction should be 25% higher than the values given above.
- Warrant values for free flow apply when the 85th percentile speed of artery traffic equals or exceeds 70 km/h or when the intersection lies within the built-up area of an isolated community having a population of less than 10,000. Warrant values for restricted flow apply to large urban communities when the 85th percentile speed of artery traffic does not exceed 70 km/h.
- The lowest sectional percentage governs the entire warrant.
- For "T" intersections the warrant values for the minor road should be increased by 50% (Warrant 1B only).
- All flow values for Justification 1 and 2 are to be increased by 20% in the case of new intersections, Justification 3 is to only be used for existing intersections and all flow values for Warrant 1 and Warrant 2 of Justification 7 are to be increased by 20% for existing intersections and by 50% in the case of new intersections.
- The crossing volumes are defined as the sum of:
  - Left-turns from both minor road approaches.
  - The heaviest through volume from the minor road.
  - 50% of the heavier left turn movement from major road when both of the following are met:
    - the left-turn volume >120 vph
    - the left-turn volume plus the opposing volume >720 vph
  - Pedestrians crossing the main road.

2+ Lanes per Direction

Free Flow

4-legged Intersection

New Intersection

**CONCLUSION:** Based on Justification 7, the intersection meets the minimum warrants for traffic control signals.

\* "Ontario Traffic Manual, Book 12 (March 2012)", Ontario Ministry of Transportation.

## City of Ottawa

### Roundabout Initial Feasibility Screening Tool

The intent of this screening tool is to provide a relatively quick assessment of the feasibility of a roundabout at a particular intersection in comparison to other appropriate forms of traffic control or road modifications including all-way stop control, traffic signals, auxiliary lanes, etc. The intended outcome of this tool is to provide enough information to assist staff in deciding whether or not to proceed with an Intersection Control Study to investigate the feasibility of a roundabout in more detail.

|   |                                                                                                                                                                                                                                                                                    |                                                                                                           |
|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| 1 | Project Name:                                                                                                                                                                                                                                                                      | Riverside South Employment Lands & Blocks 13, 14                                                          |
| 2 | Intersection:                                                                                                                                                                                                                                                                      | Limebank Road & Realigned Leitrim Road                                                                    |
| 3 | Location and Description of Intersection:<br>Lane Configuration, total or approach AADT, distance to nearby intersection(s), etc. Attach or sketch a diagram and include existing and/or horizon-year turning movements. If an existing intersection then indicate type of control | Future four-legged intersection approximately 600m south of the existing Limebank & Leitrim intersection. |
| 4 | What traditional modifications are proposed?<br>All-way stop control, traffic signals, auxiliary lanes, etc. Attach or sketch a diagram if necessary.                                                                                                                              | Traffic signals                                                                                           |
| 5 | What size of roundabout is being considered?<br>Describe, and attach a Roundabout Traffic Flow Worksheet                                                                                                                                                                           | Two-lane roundabout                                                                                       |
| 6 | Why is a roundabout being considered?                                                                                                                                                                                                                                              | As an alternative to traffic signals                                                                      |

- 7 Are there contra-indications for
- If "Yes" is indicated for one or more of the contra-indications then a roundabout may be problematic at the subject intersection. That is not to say that a roundabout is not possible, just that there may be difficulties or high

| No. | Contra-Indication                                                                                                                                                                                                                                                          | Outcome                                                             |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|
| 1   | Is there insufficient property at the intersection (i.e. less than 44 metres diameter if considering a single-lane roundabout, and less than 60 metres if considering a two-lane roundabout) or property constraints that would require demolition of adjacent structures? | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| 2   | Are there any instances where stopping sight distance (SSD) of a roundabout yield line may not be attainable (i.e. the intersection is on a crest vertical curve)?                                                                                                         | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| 3   | Is there an existing uncontrolled approach with a grade in excess of 4 percent?                                                                                                                                                                                            | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| 4   | Is the intersection located within a coordinated signal system?                                                                                                                                                                                                            | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| 5   | Is there a closely-spaced traffic signal or railway crossing that could not be controlled with a nearby roundabout?                                                                                                                                                        | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| 6   | Are significant differences in directional flows or any situations of sudden high demand expected?                                                                                                                                                                         | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| 7   | Are there known visually-impaired pedestrians that cross this intersection?                                                                                                                                                                                                | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |

- 8 Are there suitability factors for a roundabout?
- If "Yes" is indicated for two or more of the suitability factors then a roundabout should be technically feasible at the subject intersection..

| No. | Suitability Factor                                                                                                                                                                                         | Outcome                                                             |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|
| 1   | Does the intersection currently experience an average collision frequency of more than 1.5 injury crashes per year, or a collision rate in excess of 1 injury crash per 1 million vehicles entering (MVE)? | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| 2   | Has there been a fatal crash at the intersection in the last 10 years?                                                                                                                                     | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| 3   | Are capacity problems currently being experienced, or expected in the future?                                                                                                                              | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| 4   | Are traffic signals warranted, or expected to be warranted in the future?                                                                                                                                  | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| 5   | Does the intersection have more than 4 legs, or unusual geometry?                                                                                                                                          | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| 6   | Will Planned modifications to the intersection require that nearby structures be widened (i.e. to accommodate left-turn lanes)?                                                                            | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| 7   | Is the intersection located at a transition between rural and urban environments (i.e. an urban boundary) such that a roundabout could act as a means of speed transition?                                 | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |

- 9 Conclusions/recommendation whether to proceed with an Intersection Control Study:

Given that only one of the suitability factors has been met and that traffic flows are highly directional (primarily north-south), a roundabout is not recommended at this location.

DRAFT

## City of Ottawa

### Mini-Roundabout Screening Criteria

Mini roundabouts are best suited and most effective when they meet the following conditions;

| No. | Criteria                                                                                                             | Outcome                                                             |
|-----|----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|
| 1   | Located at minor collector road intersecting a minor collector road or a local residential road                      | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| 2   | ADT lesser than 15,000 (estimated ADT in case of new development area)                                               | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| 3   | At least 10% of the total traffic has generated from minor road (estimated in case of new development area)          | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| 4   | Operating speed <55km/hr or posted speed ≤ 50km/hr in a new development area                                         | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| 5   | A right of way wide enough to accommodate a 13 m to 27 m Inscribed Circle Diameter roundabout and adjacent sidewalks | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| 6   | Situated on a non truck route or roads without heavy truck movements                                                 | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| 7   | Intersections with no more than four legs                                                                            | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |

#### Conclusion

Multiple screening criteria have not been met and therefore a mini-roundabout is not appropriate for this location.

## Appendix J – Intersection Capacity Analyses

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Existing (2022) Traffic

1: Limebank Road & Leitrim Road  
Riverside South Employment Lands & Blocks 13, 14

Existing Traffic  
AM Peak Hour

|                         |  |  |  |  |  |   |   |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                                | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)    | 2                                                                                 | 158                                                                               | 10                                                                                | 206                                                                               | 109                                                                               | 178                                                                                | 6                                                                                   | 1065                                                                                | 473                                                                                 | 131                                                                                 | 241                                                                                 | 6                                                                                   |
| Future Volume (vph)     | 2                                                                                 | 158                                                                               | 10                                                                                | 206                                                                               | 109                                                                               | 178                                                                                | 6                                                                                   | 1065                                                                                | 473                                                                                 | 131                                                                                 | 241                                                                                 | 6                                                                                   |
| Ideal Flow (vphpl)      | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                               | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                |
| Storage Length (m)      | 130.0                                                                             |                                                                                   | 130.0                                                                             | 120.0                                                                             |                                                                                   | 150.0                                                                              | 195.0                                                                               |                                                                                     | 180.0                                                                               | 210.0                                                                               |                                                                                     | 185.0                                                                               |
| Storage Lanes           | 2                                                                                 |                                                                                   | 1                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                  | 2                                                                                   |                                                                                     | 1                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (m)        | 7.6                                                                               |                                                                                   |                                                                                   | 7.6                                                                               |                                                                                   |                                                                                    | 7.6                                                                                 |                                                                                     |                                                                                     | 7.6                                                                                 |                                                                                     |                                                                                     |
| Lane Util. Factor       | 0.97                                                                              | 1.00                                                                              | 1.00                                                                              | 0.97                                                                              | 1.00                                                                              | 1.00                                                                               | 0.97                                                                                | 0.95                                                                                | 1.00                                                                                | 0.97                                                                                | 0.95                                                                                | 1.00                                                                                |
| Ped Bike Factor         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | 0.99                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |
| Frt                     |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.850                                                                              |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                    | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 3354                                                                              | 1820                                                                              | 1031                                                                              | 2942                                                                              | 1733                                                                              | 1488                                                                               | 3354                                                                                | 3357                                                                                | 1419                                                                                | 3077                                                                                | 3357                                                                                | 1547                                                                                |
| Flt Permitted           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                    | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 3354                                                                              | 1820                                                                              | 1031                                                                              | 2942                                                                              | 1733                                                                              | 1488                                                                               | 3354                                                                                | 3357                                                                                | 1400                                                                                | 3075                                                                                | 3357                                                                                | 1547                                                                                |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                                |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   |                                                                                   | 186                                                                               |                                                                                   |                                                                                   | 198                                                                                |                                                                                     |                                                                                     | 502                                                                                 |                                                                                     |                                                                                     | 188                                                                                 |
| Link Speed (k/h)        |                                                                                   | 80                                                                                |                                                                                   |                                                                                   | 80                                                                                |                                                                                    |                                                                                     | 80                                                                                  |                                                                                     |                                                                                     | 80                                                                                  |                                                                                     |
| Link Distance (m)       |                                                                                   | 395.5                                                                             |                                                                                   |                                                                                   | 472.5                                                                             |                                                                                    |                                                                                     | 509.3                                                                               |                                                                                     |                                                                                     | 517.2                                                                               |                                                                                     |
| Travel Time (s)         |                                                                                   | 17.8                                                                              |                                                                                   |                                                                                   | 21.3                                                                              |                                                                                    |                                                                                     | 22.9                                                                                |                                                                                     |                                                                                     | 23.3                                                                                |                                                                                     |
| Confl. Peds. (#/hr)     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     |                                                                                     |
| Peak Hour Factor        | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                               | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                |
| Heavy Vehicles (%)      | 0%                                                                                | 0%                                                                                | 50%                                                                               | 14%                                                                               | 5%                                                                                | 4%                                                                                 | 0%                                                                                  | 3%                                                                                  | 9%                                                                                  | 9%                                                                                  | 3%                                                                                  | 0%                                                                                  |
| Adj. Flow (vph)         | 2                                                                                 | 176                                                                               | 11                                                                                | 229                                                                               | 121                                                                               | 198                                                                                | 7                                                                                   | 1183                                                                                | 526                                                                                 | 146                                                                                 | 268                                                                                 | 7                                                                                   |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 2                                                                                 | 176                                                                               | 11                                                                                | 229                                                                               | 121                                                                               | 198                                                                                | 7                                                                                   | 1183                                                                                | 526                                                                                 | 146                                                                                 | 268                                                                                 | 7                                                                                   |
| Turn Type               | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                | Perm                                                                               | Prot                                                                                | NA                                                                                  | Perm                                                                                | Prot                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases        | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                    | 5                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                  |                                                                                     |                                                                                     | 2                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |
| Detector Phase          | 7                                                                                 | 4                                                                                 | 4                                                                                 | 3                                                                                 | 8                                                                                 | 8                                                                                  | 5                                                                                   | 2                                                                                   | 2                                                                                   | 1                                                                                   | 6                                                                                   | 6                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 10.0                                                                              | 10.0                                                                              | 5.0                                                                               | 10.0                                                                              | 10.0                                                                               | 5.0                                                                                 | 21.0                                                                                | 21.0                                                                                | 5.0                                                                                 | 21.0                                                                                | 21.0                                                                                |
| Minimum Split (s)       | 11.1                                                                              | 30.8                                                                              | 30.8                                                                              | 11.1                                                                              | 30.8                                                                              | 30.8                                                                               | 11.6                                                                                | 27.6                                                                                | 27.6                                                                                | 11.6                                                                                | 27.6                                                                                | 27.6                                                                                |
| Total Split (s)         | 16.1                                                                              | 26.8                                                                              | 26.8                                                                              | 26.1                                                                              | 36.8                                                                              | 36.8                                                                               | 16.6                                                                                | 56.6                                                                                | 56.6                                                                                | 21.6                                                                                | 41.6                                                                                | 41.6                                                                                |
| Total Split (%)         | 12.3%                                                                             | 20.4%                                                                             | 20.4%                                                                             | 19.9%                                                                             | 28.1%                                                                             | 28.1%                                                                              | 12.7%                                                                               | 43.2%                                                                               | 43.2%                                                                               | 16.5%                                                                               | 31.7%                                                                               | 31.7%                                                                               |
| Maximum Green (s)       | 10.0                                                                              | 20.0                                                                              | 20.0                                                                              | 20.0                                                                              | 30.0                                                                              | 30.0                                                                               | 10.0                                                                                | 50.0                                                                                | 50.0                                                                                | 15.0                                                                                | 35.0                                                                                | 35.0                                                                                |
| Yellow Time (s)         | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 4.2                                                                                | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 |
| All-Red Time (s)        | 1.9                                                                               | 2.6                                                                               | 2.6                                                                               | 1.9                                                                               | 2.6                                                                               | 2.6                                                                                | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     | 6.1                                                                               | 6.8                                                                               | 6.8                                                                               | 6.1                                                                               | 6.8                                                                               | 6.8                                                                                | 6.6                                                                                 | 6.6                                                                                 | 6.6                                                                                 | 6.6                                                                                 | 6.6                                                                                 | 6.6                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                                | Lead                                                                                | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                               | None                                                                                | Min                                                                                 | Min                                                                                 | None                                                                                | Min                                                                                 | Min                                                                                 |
| Walk Time (s)           |                                                                                   | 7.0                                                                               | 7.0                                                                               |                                                                                   | 7.0                                                                               | 7.0                                                                                |                                                                                     | 7.0                                                                                 | 7.0                                                                                 |                                                                                     | 7.0                                                                                 | 7.0                                                                                 |
| Flash Dont Walk (s)     |                                                                                   | 17.0                                                                              | 17.0                                                                              |                                                                                   | 17.0                                                                              | 17.0                                                                               |                                                                                     | 14.0                                                                                | 14.0                                                                                |                                                                                     | 14.0                                                                                | 14.0                                                                                |
| Pedestrian Calls (#/hr) |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Act Effect Green (s)    | 5.7                                                                               | 15.8                                                                              | 15.8                                                                              | 14.5                                                                              | 34.4                                                                              | 34.4                                                                               | 5.9                                                                                 | 46.9                                                                                | 46.9                                                                                | 11.0                                                                                | 62.3                                                                                | 62.3                                                                                |
| Actuated g/C Ratio      | 0.05                                                                              | 0.14                                                                              | 0.14                                                                              | 0.13                                                                              | 0.30                                                                              | 0.30                                                                               | 0.05                                                                                | 0.41                                                                                | 0.41                                                                                | 0.10                                                                                | 0.54                                                                                | 0.54                                                                                |
| v/c Ratio               | 0.01                                                                              | 0.70                                                                              | 0.04                                                                              | 0.62                                                                              | 0.23                                                                              | 0.34                                                                               | 0.04                                                                                | 0.86                                                                                | 0.61                                                                                | 0.50                                                                                | 0.15                                                                                | 0.01                                                                                |

1: Limebank Road & Leitrim Road  
Riverside South Employment Lands & Blocks 13, 14

Existing Traffic  
AM Peak Hour

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Control Delay          | 58.5                                                                              | 64.6                                                                              | 0.2                                                                               | 56.8                                                                              | 33.8                                                                              | 6.5                                                                               | 58.3                                                                                | 39.8                                                                                | 6.3                                                                                 | 57.6                                                                                | 15.0                                                                                | 0.0                                                                                 |
| Queue Delay            | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay            | 58.5                                                                              | 64.6                                                                              | 0.2                                                                               | 56.8                                                                              | 33.8                                                                              | 6.5                                                                               | 58.3                                                                                | 39.8                                                                                | 6.3                                                                                 | 57.6                                                                                | 15.0                                                                                | 0.0                                                                                 |
| LOS                    | E                                                                                 | E                                                                                 | A                                                                                 | E                                                                                 | C                                                                                 | A                                                                                 | E                                                                                   | D                                                                                   | A                                                                                   | E                                                                                   | B                                                                                   | A                                                                                   |
| Approach Delay         | 60.8                                                                              |                                                                                   |                                                                                   | 33.6                                                                              |                                                                                   |                                                                                   | 29.6                                                                                |                                                                                     |                                                                                     | 29.5                                                                                |                                                                                     |                                                                                     |
| Approach LOS           | E                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Queue Length 50th (m)  | 0.2                                                                               | 39.3                                                                              | 0.0                                                                               | 26.4                                                                              | 20.6                                                                              | 0.0                                                                               | 0.8                                                                                 | 126.5                                                                               | 3.2                                                                                 | 16.9                                                                                | 14.4                                                                                | 0.0                                                                                 |
| Queue Length 95th (m)  | 1.7                                                                               | 67.4                                                                              | 0.0                                                                               | 41.6                                                                              | 42.0                                                                              | 18.2                                                                              | 3.5                                                                                 | #194.6                                                                              | 32.6                                                                                | 29.0                                                                                | 30.4                                                                                | 0.0                                                                                 |
| Internal Link Dist (m) | 371.5                                                                             |                                                                                   |                                                                                   | 448.5                                                                             |                                                                                   |                                                                                   | 485.3                                                                               |                                                                                     |                                                                                     | 493.2                                                                               |                                                                                     |                                                                                     |
| Turn Bay Length (m)    | 130.0                                                                             |                                                                                   |                                                                                   | 130.0                                                                             | 120.0                                                                             |                                                                                   |                                                                                     | 150.0                                                                               | 195.0                                                                               |                                                                                     |                                                                                     | 185.0                                                                               |
| Base Capacity (vph)    | 297                                                                               | 322                                                                               | 335                                                                               | 521                                                                               | 535                                                                               | 596                                                                               | 297                                                                                 | 1489                                                                                | 900                                                                                 | 409                                                                                 | 1859                                                                                | 940                                                                                 |
| Starvation Cap Reductn | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio      | 0.01                                                                              | 0.55                                                                              | 0.03                                                                              | 0.44                                                                              | 0.23                                                                              | 0.33                                                                              | 0.02                                                                                | 0.79                                                                                | 0.58                                                                                | 0.36                                                                                | 0.14                                                                                | 0.01                                                                                |

Intersection Summary

|                                                                 |                        |
|-----------------------------------------------------------------|------------------------|
| Area Type:                                                      | Other                  |
| Cycle Length: 131.1                                             |                        |
| Actuated Cycle Length: 114.7                                    |                        |
| Natural Cycle: 95                                               |                        |
| Control Type: Actuated-Uncoordinated                            |                        |
| Maximum v/c Ratio: 0.86                                         |                        |
| Intersection Signal Delay: 32.4                                 | Intersection LOS: C    |
| Intersection Capacity Utilization 72.8%                         | ICU Level of Service C |
| Analysis Period (min) 15                                        |                        |
| # 95th percentile volume exceeds capacity, queue may be longer. |                        |
| Queue shown is maximum after two cycles.                        |                        |

Splits and Phases: 1: Limebank Road & Leitrim Road

|                                                                                        |                                                                                        |                                                                                         |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |  Ø3 |  Ø4 |
| 21.6 s                                                                                 | 56.6 s                                                                                 | 26.1 s                                                                                  | 26.8 s                                                                                   |
|  Ø5 |  Ø6 |  Ø7  |  Ø8 |
| 16.6 s                                                                                 | 41.6 s                                                                                 | 16.1 s                                                                                  | 36.8 s                                                                                   |

2: Limebank Road & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Existing Traffic  
AM Peak Hour

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBU                                                                                | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 |
| Lane Configurations     |  |  |                                                                                   |  |  |  |                                                                                    |  |  |  |  |  |
| Traffic Volume (vph)    | 621                                                                               | 206                                                                               | 37                                                                                | 130                                                                               | 118                                                                               | 210                                                                               | 18                                                                                 | 38                                                                                  | 713                                                                                 | 192                                                                                 | 110                                                                                 | 224                                                                                 |
| Future Volume (vph)     | 621                                                                               | 206                                                                               | 37                                                                                | 130                                                                               | 118                                                                               | 210                                                                               | 18                                                                                 | 38                                                                                  | 713                                                                                 | 192                                                                                 | 110                                                                                 | 224                                                                                 |
| Ideal Flow (vphpl)      | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                               | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                |
| Storage Length (m)      | 100.0                                                                             |                                                                                   | 0.0                                                                               | 95.0                                                                              |                                                                                   | 60.0                                                                              |                                                                                    | 205.0                                                                               |                                                                                     | 180.0                                                                               | 255.0                                                                               |                                                                                     |
| Storage Lanes           | 2                                                                                 |                                                                                   | 0                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 |                                                                                    | 2                                                                                   |                                                                                     | 1                                                                                   | 2                                                                                   |                                                                                     |
| Taper Length (m)        | 7.6                                                                               |                                                                                   |                                                                                   | 7.6                                                                               |                                                                                   |                                                                                   |                                                                                    | 7.6                                                                                 |                                                                                     |                                                                                     | 7.6                                                                                 |                                                                                     |
| Lane Util. Factor       | 0.97                                                                              | 0.95                                                                              | 0.95                                                                              | 0.97                                                                              | 0.95                                                                              | 1.00                                                                              | 0.95                                                                               | 0.97                                                                                | 0.95                                                                                | 1.00                                                                                | 0.97                                                                                | 0.95                                                                                |
| Ped Bike Factor         | 0.88                                                                              | 1.00                                                                              |                                                                                   | 0.98                                                                              |                                                                                   | 0.90                                                                              |                                                                                    | 0.99                                                                                |                                                                                     | 0.96                                                                                | 0.98                                                                                |                                                                                     |
| Frt                     |                                                                                   | 0.977                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                    |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     |
| Flt Protected           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                    | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |
| Satd. Flow (prot)       | 3321                                                                              | 3292                                                                              | 0                                                                                 | 3022                                                                              | 3357                                                                              | 1419                                                                              | 0                                                                                  | 3244                                                                                | 3390                                                                                | 1419                                                                                | 2968                                                                                | 3144                                                                                |
| Flt Permitted           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                    | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |
| Satd. Flow (perm)       | 2908                                                                              | 3292                                                                              | 0                                                                                 | 2956                                                                              | 3357                                                                              | 1278                                                                              | 0                                                                                  | 3207                                                                                | 3390                                                                                | 1357                                                                                | 2915                                                                                | 3144                                                                                |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Satd. Flow (RTOR)       |                                                                                   | 12                                                                                |                                                                                   |                                                                                   |                                                                                   | 190                                                                               |                                                                                    |                                                                                     |                                                                                     | 213                                                                                 |                                                                                     |                                                                                     |
| Link Speed (k/h)        |                                                                                   | 60                                                                                |                                                                                   |                                                                                   | 60                                                                                |                                                                                   |                                                                                    |                                                                                     | 80                                                                                  |                                                                                     |                                                                                     | 80                                                                                  |
| Link Distance (m)       |                                                                                   | 243.4                                                                             |                                                                                   |                                                                                   | 525.1                                                                             |                                                                                   |                                                                                    |                                                                                     | 473.0                                                                               |                                                                                     |                                                                                     | 635.3                                                                               |
| Travel Time (s)         |                                                                                   | 14.6                                                                              |                                                                                   |                                                                                   | 31.5                                                                              |                                                                                   |                                                                                    |                                                                                     | 21.3                                                                                |                                                                                     |                                                                                     | 28.6                                                                                |
| Confl. Peds. (#/hr)     | 61                                                                                |                                                                                   | 13                                                                                | 13                                                                                |                                                                                   | 61                                                                                |                                                                                    | 11                                                                                  |                                                                                     | 22                                                                                  | 22                                                                                  |                                                                                     |
| Peak Hour Factor        | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                               | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                |
| Heavy Vehicles (%)      | 1%                                                                                | 2%                                                                                | 3%                                                                                | 11%                                                                               | 3%                                                                                | 9%                                                                                | 0%                                                                                 | 5%                                                                                  | 2%                                                                                  | 9%                                                                                  | 13%                                                                                 | 10%                                                                                 |
| Adj. Flow (vph)         | 690                                                                               | 229                                                                               | 41                                                                                | 144                                                                               | 131                                                                               | 233                                                                               | 20                                                                                 | 42                                                                                  | 792                                                                                 | 213                                                                                 | 122                                                                                 | 249                                                                                 |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 690                                                                               | 270                                                                               | 0                                                                                 | 144                                                                               | 131                                                                               | 233                                                                               | 0                                                                                  | 62                                                                                  | 792                                                                                 | 213                                                                                 | 122                                                                                 | 249                                                                                 |
| Turn Type               | Prot                                                                              | NA                                                                                |                                                                                   | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                               | Prot                                                                                | NA                                                                                  | Perm                                                                                | Prot                                                                                | NA                                                                                  |
| Protected Phases        | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                  | 5                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   | 6                                                                                   |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 8                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 | 8                                                                                 | 5                                                                                  | 5                                                                                   | 2                                                                                   | 2                                                                                   | 1                                                                                   | 6                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 10.0                                                                              |                                                                                   | 5.0                                                                               | 10.0                                                                              | 10.0                                                                              | 5.0                                                                                | 5.0                                                                                 | 15.0                                                                                | 15.0                                                                                | 5.0                                                                                 | 15.0                                                                                |
| Minimum Split (s)       | 11.5                                                                              | 41.5                                                                              |                                                                                   | 11.5                                                                              | 41.5                                                                              | 41.5                                                                              | 11.6                                                                               | 11.6                                                                                | 41.7                                                                                | 41.7                                                                                | 11.6                                                                                | 41.7                                                                                |
| Total Split (s)         | 56.5                                                                              | 26.5                                                                              |                                                                                   | 31.5                                                                              | 26.5                                                                              | 26.5                                                                              | 16.6                                                                               | 16.6                                                                                | 61.7                                                                                | 61.7                                                                                | 26.6                                                                                | 31.7                                                                                |
| Total Split (%)         | 33.0%                                                                             | 15.5%                                                                             |                                                                                   | 18.4%                                                                             | 15.5%                                                                             | 15.5%                                                                             | 9.7%                                                                               | 9.7%                                                                                | 36.0%                                                                               | 36.0%                                                                               | 15.5%                                                                               | 18.5%                                                                               |
| Maximum Green (s)       | 50.0                                                                              | 20.0                                                                              |                                                                                   | 25.0                                                                              | 20.0                                                                              | 20.0                                                                              | 10.0                                                                               | 10.0                                                                                | 55.0                                                                                | 55.0                                                                                | 20.0                                                                                | 25.0                                                                                |
| Yellow Time (s)         | 3.7                                                                               | 3.7                                                                               |                                                                                   | 3.7                                                                               | 3.7                                                                               | 3.7                                                                               | 4.6                                                                                | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 |
| All-Red Time (s)        | 2.8                                                                               | 2.8                                                                               |                                                                                   | 2.8                                                                               | 2.8                                                                               | 2.8                                                                               | 2.0                                                                                | 2.0                                                                                 | 2.1                                                                                 | 2.1                                                                                 | 2.0                                                                                 | 2.1                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     | 6.5                                                                               | 6.5                                                                               |                                                                                   | 6.5                                                                               | 6.5                                                                               | 6.5                                                                               |                                                                                    | 6.6                                                                                 | 6.7                                                                                 | 6.7                                                                                 | 6.6                                                                                 | 6.7                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                               | Lead                                                                                | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | Min                                                                               | None                                                                              |                                                                                   | None                                                                              | None                                                                              | None                                                                              | None                                                                               | None                                                                                | Min                                                                                 | Min                                                                                 | None                                                                                | Min                                                                                 |
| Walk Time (s)           |                                                                                   | 10.0                                                                              |                                                                                   |                                                                                   | 10.0                                                                              | 10.0                                                                              |                                                                                    |                                                                                     | 10.0                                                                                | 10.0                                                                                |                                                                                     | 10.0                                                                                |
| Flash Dont Walk (s)     |                                                                                   | 25.0                                                                              |                                                                                   |                                                                                   | 25.0                                                                              | 25.0                                                                              |                                                                                    |                                                                                     | 25.0                                                                                | 25.0                                                                                |                                                                                     | 25.0                                                                                |
| Pedestrian Calls (#/hr) |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Act Effect Green (s)    | 32.0                                                                              | 33.3                                                                              |                                                                                   | 11.9                                                                              | 13.2                                                                              | 13.2                                                                              |                                                                                    | 8.0                                                                                 | 36.2                                                                                | 36.2                                                                                | 11.0                                                                                | 42.6                                                                                |
| Actuated g/C Ratio      | 0.27                                                                              | 0.28                                                                              |                                                                                   | 0.10                                                                              | 0.11                                                                              | 0.11                                                                              |                                                                                    | 0.07                                                                                | 0.30                                                                                | 0.30                                                                                | 0.09                                                                                | 0.36                                                                                |
| v/c Ratio               | 0.78                                                                              | 0.29                                                                              |                                                                                   | 0.48                                                                              | 0.36                                                                              | 0.75                                                                              |                                                                                    | 0.29                                                                                | 0.77                                                                                | 0.38                                                                                | 0.45                                                                                | 0.22                                                                                |

2: Limebank Road & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Existing Traffic  
AM Peak Hour

|                         |       |
|-------------------------|-------|
| Lane Group              | SBR   |
| Lane Configurations     |       |
| Traffic Volume (vph)    | 123   |
| Future Volume (vph)     | 123   |
| Ideal Flow (vphpl)      | 1800  |
| Storage Length (m)      | 230.0 |
| Storage Lanes           | 1     |
| Taper Length (m)        |       |
| Lane Util. Factor       | 1.00  |
| Ped Bike Factor         | 0.97  |
| Frt                     | 0.850 |
| Flt Protected           |       |
| Satd. Flow (prot)       | 1502  |
| Flt Permitted           |       |
| Satd. Flow (perm)       | 1460  |
| Right Turn on Red       | Yes   |
| Satd. Flow (RTOR)       | 147   |
| Link Speed (k/h)        |       |
| Link Distance (m)       |       |
| Travel Time (s)         |       |
| Confl. Peds. (#/hr)     | 11    |
| Peak Hour Factor        | 0.90  |
| Heavy Vehicles (%)      | 3%    |
| Adj. Flow (vph)         | 137   |
| Shared Lane Traffic (%) |       |
| Lane Group Flow (vph)   | 137   |
| Turn Type               | Perm  |
| Protected Phases        |       |
| Permitted Phases        | 6     |
| Detector Phase          | 6     |
| Switch Phase            |       |
| Minimum Initial (s)     | 15.0  |
| Minimum Split (s)       | 41.7  |
| Total Split (s)         | 31.7  |
| Total Split (%)         | 18.5% |
| Maximum Green (s)       | 25.0  |
| Yellow Time (s)         | 4.6   |
| All-Red Time (s)        | 2.1   |
| Lost Time Adjust (s)    | 0.0   |
| Total Lost Time (s)     | 6.7   |
| Lead/Lag                | Lag   |
| Lead-Lag Optimize?      | Yes   |
| Vehicle Extension (s)   | 3.0   |
| Recall Mode             | Min   |
| Walk Time (s)           | 10.0  |
| Flash Dont Walk (s)     | 25.0  |
| Pedestrian Calls (#/hr) | 0     |
| Act Effct Green (s)     | 42.6  |
| Actuated g/C Ratio      | 0.36  |
| v/c Ratio               | 0.22  |

2: Limebank Road & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Existing Traffic  
AM Peak Hour

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBU                                                                                | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 |
| Control Delay          | 48.8                                                                              | 34.8                                                                              |                                                                                   | 61.3                                                                              | 56.7                                                                              | 30.1                                                                              |                                                                                    | 64.4                                                                                | 45.0                                                                                | 6.7                                                                                 | 62.0                                                                                | 30.2                                                                                |
| Queue Delay            | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay            | 48.8                                                                              | 34.8                                                                              |                                                                                   | 61.3                                                                              | 56.7                                                                              | 30.1                                                                              |                                                                                    | 64.4                                                                                | 45.0                                                                                | 6.7                                                                                 | 62.0                                                                                | 30.2                                                                                |
| LOS                    | D                                                                                 | C                                                                                 |                                                                                   | E                                                                                 | E                                                                                 | C                                                                                 |                                                                                    | E                                                                                   | D                                                                                   | A                                                                                   | E                                                                                   | C                                                                                   |
| Approach Delay         |                                                                                   | 44.9                                                                              |                                                                                   |                                                                                   | 45.8                                                                              |                                                                                   |                                                                                    |                                                                                     | 38.5                                                                                |                                                                                     |                                                                                     | 31.1                                                                                |
| Approach LOS           |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    |                                                                                     | D                                                                                   |                                                                                     |                                                                                     | C                                                                                   |
| Queue Length 50th (m)  | 72.7                                                                              | 24.1                                                                              |                                                                                   | 15.8                                                                              | 14.6                                                                              | 9.1                                                                               |                                                                                    | 6.8                                                                                 | 83.3                                                                                | 0.0                                                                                 | 13.4                                                                                | 20.9                                                                                |
| Queue Length 95th (m)  | 126.0                                                                             | 45.4                                                                              |                                                                                   | 34.7                                                                              | 31.8                                                                              | 44.9                                                                              |                                                                                    | 18.2                                                                                | 142.4                                                                               | 18.8                                                                                | 30.5                                                                                | 40.5                                                                                |
| Internal Link Dist (m) |                                                                                   | 219.4                                                                             |                                                                                   |                                                                                   | 501.1                                                                             |                                                                                   |                                                                                    |                                                                                     | 449.0                                                                               |                                                                                     |                                                                                     | 611.3                                                                               |
| Turn Bay Length (m)    | 100.0                                                                             |                                                                                   |                                                                                   | 95.0                                                                              |                                                                                   | 60.0                                                                              |                                                                                    | 205.0                                                                               |                                                                                     | 180.0                                                                               | 255.0                                                                               |                                                                                     |
| Base Capacity (vph)    | 1448                                                                              | 1321                                                                              |                                                                                   | 659                                                                               | 585                                                                               | 379                                                                               |                                                                                    | 283                                                                                 | 1627                                                                                | 761                                                                                 | 517                                                                                 | 1783                                                                                |
| Starvation Cap Reductn | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn    | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio      | 0.48                                                                              | 0.20                                                                              |                                                                                   | 0.22                                                                              | 0.22                                                                              | 0.61                                                                              |                                                                                    | 0.22                                                                                | 0.49                                                                                | 0.28                                                                                | 0.24                                                                                | 0.14                                                                                |

Intersection Summary

Area Type: Other

Cycle Length: 171.3

Actuated Cycle Length: 119.9

Natural Cycle: 130

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 40.5

Intersection LOS: D

Intersection Capacity Utilization 97.7%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 2: Limebank Road & Spratt Road

|                                                                                     |                                                                                     |                                                                                     |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |  |
| Ø1                                                                                  | Ø2                                                                                  | Ø3                                                                                  | Ø4                                                                                    |
| 26.6 s                                                                              | 61.7 s                                                                              | 31.5 s                                                                              | 26.5 s                                                                                |
|  |  |  |  |
| Ø5                                                                                  | Ø6                                                                                  | Ø7                                                                                  | Ø8                                                                                    |
| 16.6 s                                                                              | 31.7 s                                                                              | 56.5 s                                                                              | 26.5 s                                                                                |

2: Limebank Road & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Existing Traffic  
AM Peak Hour



|                        |       |
|------------------------|-------|
| Lane Group             | SBR   |
| Control Delay          | 5.1   |
| Queue Delay            | 0.0   |
| Total Delay            | 5.1   |
| LOS                    | A     |
| Approach Delay         |       |
| Approach LOS           |       |
| Queue Length 50th (m)  | 0.0   |
| Queue Length 95th (m)  | 12.4  |
| Internal Link Dist (m) |       |
| Turn Bay Length (m)    | 230.0 |
| Base Capacity (vph)    | 891   |
| Starvation Cap Reductn | 0     |
| Spillback Cap Reductn  | 0     |
| Storage Cap Reductn    | 0     |
| Reduced v/c Ratio      | 0.15  |
| Intersection Summary   |       |

3: Urbandale Plaza & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Existing Traffic  
AM Peak Hour

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBR                                                                               |
| Lane Configurations     | ↑↑                                                                                |                                                                                   | ↱                                                                                 | ↑↑                                                                                | ↱                                                                                 | ↱                                                                                 |
| Traffic Volume (vph)    | 860                                                                               | 20                                                                                | 25                                                                                | 254                                                                               | 15                                                                                | 4                                                                                 |
| Future Volume (vph)     | 860                                                                               | 20                                                                                | 25                                                                                | 254                                                                               | 15                                                                                | 4                                                                                 |
| Ideal Flow (vphpl)      | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |
| Ped Bike Factor         | 1.00                                                                              |                                                                                   | 0.99                                                                              |                                                                                   | 1.00                                                                              | 0.98                                                                              |
| Frt                     | 0.997                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                             |
| Flt Protected           |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |
| Satd. Flow (prot)       | 3410                                                                              | 0                                                                                 | 1662                                                                              | 3262                                                                              | 1530                                                                              | 1547                                                                              |
| Flt Permitted           |                                                                                   |                                                                                   | 0.293                                                                             |                                                                                   | 0.950                                                                             |                                                                                   |
| Satd. Flow (perm)       | 3410                                                                              | 0                                                                                 | 510                                                                               | 3262                                                                              | 1529                                                                              | 1523                                                                              |
| Right Turn on Red       |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   | Yes                                                                               |
| Satd. Flow (RTOR)       | 4                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 4                                                                                 |
| Link Speed (k/h)        | 60                                                                                |                                                                                   |                                                                                   | 60                                                                                | 50                                                                                |                                                                                   |
| Link Distance (m)       | 254.5                                                                             |                                                                                   |                                                                                   | 243.4                                                                             | 128.6                                                                             |                                                                                   |
| Travel Time (s)         | 15.3                                                                              |                                                                                   |                                                                                   | 14.6                                                                              | 9.3                                                                               |                                                                                   |
| Confl. Peds. (#/hr)     |                                                                                   | 13                                                                                | 13                                                                                |                                                                                   | 1                                                                                 | 4                                                                                 |
| Peak Hour Factor        | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Heavy Vehicles (%)      | 1%                                                                                | 0%                                                                                | 4%                                                                                | 6%                                                                                | 13%                                                                               | 0%                                                                                |
| Adj. Flow (vph)         | 956                                                                               | 22                                                                                | 28                                                                                | 282                                                                               | 17                                                                                | 4                                                                                 |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Group Flow (vph)   | 978                                                                               | 0                                                                                 | 28                                                                                | 282                                                                               | 17                                                                                | 4                                                                                 |
| Turn Type               | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                | Perm                                                                              | Perm                                                                              |
| Protected Phases        | 2                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   |
| Permitted Phases        |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   | 8                                                                                 | 8                                                                                 |
| Detector Phase          | 2                                                                                 |                                                                                   | 6                                                                                 | 6                                                                                 | 8                                                                                 | 8                                                                                 |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Minimum Initial (s)     | 10.0                                                                              |                                                                                   | 10.0                                                                              | 10.0                                                                              | 5.0                                                                               | 5.0                                                                               |
| Minimum Split (s)       | 24.0                                                                              |                                                                                   | 24.0                                                                              | 24.0                                                                              | 32.0                                                                              | 32.0                                                                              |
| Total Split (s)         | 48.0                                                                              |                                                                                   | 48.0                                                                              | 48.0                                                                              | 32.0                                                                              | 32.0                                                                              |
| Total Split (%)         | 60.0%                                                                             |                                                                                   | 60.0%                                                                             | 60.0%                                                                             | 40.0%                                                                             | 40.0%                                                                             |
| Maximum Green (s)       | 42.0                                                                              |                                                                                   | 42.0                                                                              | 42.0                                                                              | 26.0                                                                              | 26.0                                                                              |
| Yellow Time (s)         | 3.7                                                                               |                                                                                   | 3.7                                                                               | 3.7                                                                               | 3.3                                                                               | 3.3                                                                               |
| All-Red Time (s)        | 2.3                                                                               |                                                                                   | 2.3                                                                               | 2.3                                                                               | 2.7                                                                               | 2.7                                                                               |
| Lost Time Adjust (s)    | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| Total Lost Time (s)     | 6.0                                                                               |                                                                                   | 6.0                                                                               | 6.0                                                                               | 6.0                                                                               | 6.0                                                                               |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Vehicle Extension (s)   | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |
| Recall Mode             | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             | None                                                                              | None                                                                              |
| Walk Time (s)           | 7.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 7.0                                                                               | 7.0                                                                               |
| Flash Dont Walk (s)     | 10.0                                                                              |                                                                                   | 0.0                                                                               | 0.0                                                                               | 19.0                                                                              | 19.0                                                                              |
| Pedestrian Calls (#/hr) | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Act Effect Green (s)    | 72.2                                                                              |                                                                                   | 72.2                                                                              | 72.2                                                                              | 6.5                                                                               | 6.5                                                                               |
| Actuated g/C Ratio      | 0.90                                                                              |                                                                                   | 0.90                                                                              | 0.90                                                                              | 0.08                                                                              | 0.08                                                                              |
| v/c Ratio               | 0.32                                                                              |                                                                                   | 0.06                                                                              | 0.10                                                                              | 0.14                                                                              | 0.03                                                                              |
| Control Delay           | 2.0                                                                               |                                                                                   | 2.4                                                                               | 1.6                                                                               | 36.0                                                                              | 22.2                                                                              |
| Queue Delay             | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| Total Delay             | 2.0                                                                               |                                                                                   | 2.4                                                                               | 1.6                                                                               | 36.0                                                                              | 22.2                                                                              |

3: Urbandale Plaza & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Existing Traffic  
AM Peak Hour

|                        | →     | ↘   | ↙    | ←     | ↖     | ↗    |
|------------------------|-------|-----|------|-------|-------|------|
| Lane Group             | EBT   | EBR | WBL  | WBT   | NBL   | NBR  |
| LOS                    | A     |     | A    | A     | D     | C    |
| Approach Delay         | 2.0   |     |      | 1.6   | 33.4  |      |
| Approach LOS           | A     |     |      | A     | C     |      |
| Queue Length 50th (m)  | 0.0   |     | 0.0  | 0.0   | 2.5   | 0.0  |
| Queue Length 95th (m)  | 28.5  |     | 2.7  | 7.5   | 8.1   | 2.7  |
| Internal Link Dist (m) | 230.5 |     |      | 219.4 | 104.6 |      |
| Turn Bay Length (m)    |       |     |      |       |       |      |
| Base Capacity (vph)    | 3076  |     | 460  | 2942  | 496   | 497  |
| Starvation Cap Reductn | 0     |     | 0    | 0     | 0     | 0    |
| Spillback Cap Reductn  | 0     |     | 0    | 0     | 0     | 0    |
| Storage Cap Reductn    | 0     |     | 0    | 0     | 0     | 0    |
| Reduced v/c Ratio      | 0.32  |     | 0.06 | 0.10  | 0.03  | 0.01 |

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.32

Intersection Signal Delay: 2.4

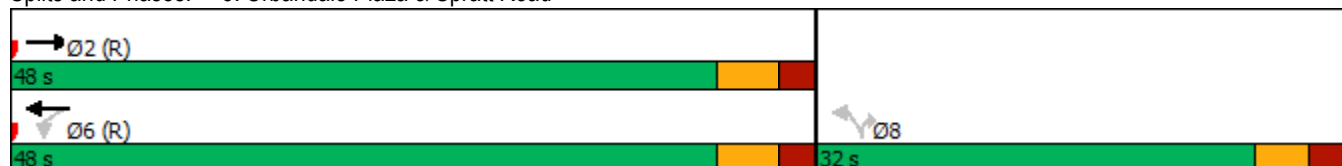
Intersection LOS: A

Intersection Capacity Utilization 42.1%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 3: Urbandale Plaza & Spratt Road



1: Limebank Road & Leitrim Road  
Riverside South Employment Lands & Blocks 13, 14

Existing Traffic  
PM Peak Hour

|                         |  |  |  |  |  |   |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                                | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)    | 7                                                                                 | 125                                                                               | 15                                                                                | 492                                                                               | 243                                                                               | 186                                                                                | 4                                                                                   | 354                                                                                 | 186                                                                                 | 185                                                                                 | 927                                                                                 | 5                                                                                   |
| Future Volume (vph)     | 7                                                                                 | 125                                                                               | 15                                                                                | 492                                                                               | 243                                                                               | 186                                                                                | 4                                                                                   | 354                                                                                 | 186                                                                                 | 185                                                                                 | 927                                                                                 | 5                                                                                   |
| Ideal Flow (vphpl)      | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                               | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                |
| Storage Length (m)      | 130.0                                                                             |                                                                                   | 130.0                                                                             | 120.0                                                                             |                                                                                   | 150.0                                                                              | 195.0                                                                               |                                                                                     | 180.0                                                                               | 210.0                                                                               |                                                                                     | 185.0                                                                               |
| Storage Lanes           | 2                                                                                 |                                                                                   | 1                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                  | 2                                                                                   |                                                                                     | 1                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (m)        | 7.6                                                                               |                                                                                   |                                                                                   | 7.6                                                                               |                                                                                   |                                                                                    | 7.6                                                                                 |                                                                                     |                                                                                     | 7.6                                                                                 |                                                                                     |                                                                                     |
| Lane Util. Factor       | 0.97                                                                              | 1.00                                                                              | 1.00                                                                              | 0.97                                                                              | 1.00                                                                              | 1.00                                                                               | 0.97                                                                                | 0.95                                                                                | 1.00                                                                                | 0.97                                                                                | 0.95                                                                                | 1.00                                                                                |
| Ped Bike Factor         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | 0.99                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |
| Frt                     |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.850                                                                              |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                    | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 3354                                                                              | 1767                                                                              | 1381                                                                              | 3257                                                                              | 1802                                                                              | 1488                                                                               | 3354                                                                                | 3325                                                                                | 1419                                                                                | 3106                                                                                | 3424                                                                                | 1289                                                                                |
| Flt Permitted           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                    | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 3354                                                                              | 1767                                                                              | 1381                                                                              | 3257                                                                              | 1802                                                                              | 1488                                                                               | 3354                                                                                | 3325                                                                                | 1400                                                                                | 3100                                                                                | 3424                                                                                | 1289                                                                                |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                                |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   |                                                                                   | 232                                                                               |                                                                                   |                                                                                   | 207                                                                                |                                                                                     |                                                                                     | 234                                                                                 |                                                                                     |                                                                                     | 181                                                                                 |
| Link Speed (k/h)        |                                                                                   | 80                                                                                |                                                                                   |                                                                                   | 80                                                                                |                                                                                    |                                                                                     | 80                                                                                  |                                                                                     |                                                                                     | 80                                                                                  |                                                                                     |
| Link Distance (m)       |                                                                                   | 395.5                                                                             |                                                                                   |                                                                                   | 472.5                                                                             |                                                                                    |                                                                                     | 509.3                                                                               |                                                                                     |                                                                                     | 517.2                                                                               |                                                                                     |
| Travel Time (s)         |                                                                                   | 17.8                                                                              |                                                                                   |                                                                                   | 21.3                                                                              |                                                                                    |                                                                                     | 22.9                                                                                |                                                                                     |                                                                                     | 23.3                                                                                |                                                                                     |
| Confl. Peds. (#/hr)     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     |                                                                                     |
| Peak Hour Factor        | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                               | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                |
| Heavy Vehicles (%)      | 0%                                                                                | 3%                                                                                | 12%                                                                               | 3%                                                                                | 1%                                                                                | 4%                                                                                 | 0%                                                                                  | 4%                                                                                  | 9%                                                                                  | 8%                                                                                  | 1%                                                                                  | 20%                                                                                 |
| Adj. Flow (vph)         | 8                                                                                 | 139                                                                               | 17                                                                                | 547                                                                               | 270                                                                               | 207                                                                                | 4                                                                                   | 393                                                                                 | 207                                                                                 | 206                                                                                 | 1030                                                                                | 6                                                                                   |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 8                                                                                 | 139                                                                               | 17                                                                                | 547                                                                               | 270                                                                               | 207                                                                                | 4                                                                                   | 393                                                                                 | 207                                                                                 | 206                                                                                 | 1030                                                                                | 6                                                                                   |
| Turn Type               | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                | Perm                                                                               | Prot                                                                                | NA                                                                                  | Perm                                                                                | Prot                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases        | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                    | 5                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                  |                                                                                     |                                                                                     | 2                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |
| Detector Phase          | 7                                                                                 | 4                                                                                 | 4                                                                                 | 3                                                                                 | 8                                                                                 | 8                                                                                  | 5                                                                                   | 2                                                                                   | 2                                                                                   | 1                                                                                   | 6                                                                                   | 6                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 10.0                                                                              | 10.0                                                                              | 5.0                                                                               | 10.0                                                                              | 10.0                                                                               | 5.0                                                                                 | 21.0                                                                                | 21.0                                                                                | 5.0                                                                                 | 21.0                                                                                | 21.0                                                                                |
| Minimum Split (s)       | 11.1                                                                              | 30.8                                                                              | 30.8                                                                              | 11.1                                                                              | 30.8                                                                              | 30.8                                                                               | 11.6                                                                                | 27.6                                                                                | 27.6                                                                                | 11.6                                                                                | 27.6                                                                                | 27.6                                                                                |
| Total Split (s)         | 16.1                                                                              | 31.8                                                                              | 31.8                                                                              | 26.1                                                                              | 31.8                                                                              | 31.8                                                                               | 16.6                                                                                | 51.6                                                                                | 51.6                                                                                | 26.6                                                                                | 36.6                                                                                | 36.6                                                                                |
| Total Split (%)         | 11.8%                                                                             | 23.4%                                                                             | 23.4%                                                                             | 19.2%                                                                             | 23.4%                                                                             | 23.4%                                                                              | 12.2%                                                                               | 37.9%                                                                               | 37.9%                                                                               | 19.5%                                                                               | 26.9%                                                                               | 26.9%                                                                               |
| Maximum Green (s)       | 10.0                                                                              | 25.0                                                                              | 25.0                                                                              | 20.0                                                                              | 25.0                                                                              | 25.0                                                                               | 10.0                                                                                | 45.0                                                                                | 45.0                                                                                | 20.0                                                                                | 30.0                                                                                | 30.0                                                                                |
| Yellow Time (s)         | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 4.2                                                                                | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 |
| All-Red Time (s)        | 1.9                                                                               | 2.6                                                                               | 2.6                                                                               | 1.9                                                                               | 2.6                                                                               | 2.6                                                                                | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     | 6.1                                                                               | 6.8                                                                               | 6.8                                                                               | 6.1                                                                               | 6.8                                                                               | 6.8                                                                                | 6.6                                                                                 | 6.6                                                                                 | 6.6                                                                                 | 6.6                                                                                 | 6.6                                                                                 | 6.6                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                                | Lead                                                                                | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                               | None                                                                                | Min                                                                                 | Min                                                                                 | None                                                                                | Min                                                                                 | Min                                                                                 |
| Walk Time (s)           |                                                                                   | 7.0                                                                               | 7.0                                                                               |                                                                                   | 7.0                                                                               | 7.0                                                                                |                                                                                     | 7.0                                                                                 | 7.0                                                                                 |                                                                                     | 7.0                                                                                 | 7.0                                                                                 |
| Flash Dont Walk (s)     |                                                                                   | 17.0                                                                              | 17.0                                                                              |                                                                                   | 17.0                                                                              | 17.0                                                                               |                                                                                     | 14.0                                                                                | 14.0                                                                                |                                                                                     | 14.0                                                                                | 14.0                                                                                |
| Pedestrian Calls (#/hr) |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                  |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Act Effect Green (s)    | 5.8                                                                               | 13.1                                                                              | 13.1                                                                              | 20.1                                                                              | 37.1                                                                              | 37.1                                                                               | 5.7                                                                                 | 21.6                                                                                | 21.6                                                                                | 11.6                                                                                | 37.6                                                                                | 37.6                                                                                |
| Actuated g/C Ratio      | 0.06                                                                              | 0.14                                                                              | 0.14                                                                              | 0.22                                                                              | 0.40                                                                              | 0.40                                                                               | 0.06                                                                                | 0.23                                                                                | 0.23                                                                                | 0.13                                                                                | 0.41                                                                                | 0.41                                                                                |
| v/c Ratio               | 0.04                                                                              | 0.56                                                                              | 0.04                                                                              | 0.77                                                                              | 0.37                                                                              | 0.29                                                                               | 0.02                                                                                | 0.51                                                                                | 0.41                                                                                | 0.53                                                                                | 0.74                                                                                | 0.01                                                                                |

1: Limebank Road & Leitrim Road  
Riverside South Employment Lands & Blocks 13, 14

Existing Traffic  
PM Peak Hour

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Control Delay          | 44.3                                                                              | 46.6                                                                              | 0.2                                                                               | 43.9                                                                              | 23.3                                                                              | 4.6                                                                               | 44.5                                                                                | 34.4                                                                                | 5.7                                                                                 | 43.8                                                                                | 28.8                                                                                | 0.0                                                                                 |
| Queue Delay            | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay            | 44.3                                                                              | 46.6                                                                              | 0.2                                                                               | 43.9                                                                              | 23.3                                                                              | 4.6                                                                               | 44.5                                                                                | 34.4                                                                                | 5.7                                                                                 | 43.8                                                                                | 28.8                                                                                | 0.0                                                                                 |
| LOS                    | D                                                                                 | D                                                                                 | A                                                                                 | D                                                                                 | C                                                                                 | A                                                                                 | D                                                                                   | C                                                                                   | A                                                                                   | D                                                                                   | C                                                                                   | A                                                                                   |
| Approach Delay         | 41.7                                                                              |                                                                                   |                                                                                   | 30.5                                                                              |                                                                                   |                                                                                   | 24.6                                                                                |                                                                                     |                                                                                     | 31.2                                                                                |                                                                                     |                                                                                     |
| Approach LOS           | D                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Queue Length 50th (m)  | 0.7                                                                               | 23.2                                                                              | 0.0                                                                               | 46.6                                                                              | 31.2                                                                              | 0.0                                                                               | 0.3                                                                                 | 31.7                                                                                | 0.0                                                                                 | 17.6                                                                                | 75.4                                                                                | 0.0                                                                                 |
| Queue Length 95th (m)  | 3.2                                                                               | 44.0                                                                              | 0.0                                                                               | #83.3                                                                             | 68.5                                                                              | 15.6                                                                              | 2.1                                                                                 | 51.5                                                                                | 12.8                                                                                | 30.9                                                                                | #145.3                                                                              | 0.0                                                                                 |
| Internal Link Dist (m) | 371.5                                                                             |                                                                                   |                                                                                   | 448.5                                                                             |                                                                                   |                                                                                   | 485.3                                                                               |                                                                                     |                                                                                     | 493.2                                                                               |                                                                                     |                                                                                     |
| Turn Bay Length (m)    | 130.0                                                                             |                                                                                   | 130.0                                                                             | 120.0                                                                             |                                                                                   | 150.0                                                                             | 195.0                                                                               |                                                                                     | 180.0                                                                               | 210.0                                                                               |                                                                                     | 185.0                                                                               |
| Base Capacity (vph)    | 363                                                                               | 478                                                                               | 543                                                                               | 706                                                                               | 732                                                                               | 727                                                                               | 363                                                                                 | 1622                                                                                | 802                                                                                 | 673                                                                                 | 2042                                                                                | 841                                                                                 |
| Starvation Cap Reductn | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio      | 0.02                                                                              | 0.29                                                                              | 0.03                                                                              | 0.77                                                                              | 0.37                                                                              | 0.28                                                                              | 0.01                                                                                | 0.24                                                                                | 0.26                                                                                | 0.31                                                                                | 0.50                                                                                | 0.01                                                                                |

Intersection Summary

Area Type: Other

Cycle Length: 136.1

Actuated Cycle Length: 92.6

Natural Cycle: 105

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 30.2

Intersection LOS: C

Intersection Capacity Utilization 76.1%

ICU Level of Service D

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Limebank Road & Leitrim Road

|                                                                                        |                                                                                        |                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |  Ø3 |  Ø4 |
| 26.6 s                                                                                 | 51.6 s                                                                                 | 26.1 s                                                                                 | 31.8 s                                                                                   |
|  Ø5 |  Ø6 |  Ø7 |  Ø8 |
| 16.6 s                                                                                 | 36.6 s                                                                                 | 16.1 s                                                                                 | 31.8 s                                                                                   |

2: Limebank Road & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Existing Traffic  
PM Peak Hour

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBU                                                                                | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBU                                                                                 | SBL                                                                                 |
| Lane Configurations     |  |  |                                                                                   |  |  |  |                                                                                    |  |  |  |                                                                                     |  |
| Traffic Volume (vph)    | 214                                                                               | 32                                                                                | 42                                                                                | 30                                                                                | 21                                                                                | 21                                                                                | 22                                                                                 | 49                                                                                  | 308                                                                                 | 41                                                                                  | 1                                                                                   | 58                                                                                  |
| Future Volume (vph)     | 214                                                                               | 32                                                                                | 42                                                                                | 30                                                                                | 21                                                                                | 21                                                                                | 22                                                                                 | 49                                                                                  | 308                                                                                 | 41                                                                                  | 1                                                                                   | 58                                                                                  |
| Ideal Flow (vphpl)      | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                               | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                |
| Storage Length (m)      | 100.0                                                                             |                                                                                   | 0.0                                                                               | 95.0                                                                              |                                                                                   | 60.0                                                                              |                                                                                    | 205.0                                                                               |                                                                                     | 180.0                                                                               |                                                                                     | 255.0                                                                               |
| Storage Lanes           | 2                                                                                 |                                                                                   | 0                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 |                                                                                    | 2                                                                                   |                                                                                     | 1                                                                                   |                                                                                     | 2                                                                                   |
| Taper Length (m)        | 7.6                                                                               |                                                                                   |                                                                                   | 7.6                                                                               |                                                                                   |                                                                                   |                                                                                    | 7.6                                                                                 |                                                                                     |                                                                                     |                                                                                     | 7.6                                                                                 |
| Lane Util. Factor       | 0.97                                                                              | 0.95                                                                              | 0.95                                                                              | 0.97                                                                              | 0.95                                                                              | 1.00                                                                              | 0.95                                                                               | 0.97                                                                                | 0.95                                                                                | 1.00                                                                                | 0.95                                                                                | 0.97                                                                                |
| Ped Bike Factor         | 1.00                                                                              | 0.99                                                                              |                                                                                   | 0.99                                                                              |                                                                                   | 0.99                                                                              |                                                                                    | 1.00                                                                                |                                                                                     | 0.98                                                                                |                                                                                     | 1.00                                                                                |
| Frt                     |                                                                                   | 0.915                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                    |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     |
| Flt Protected           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                    | 0.950                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.950                                                                               |
| Satd. Flow (prot)       | 3321                                                                              | 3086                                                                              | 0                                                                                 | 3257                                                                              | 3293                                                                              | 1473                                                                              | 0                                                                                  | 3308                                                                                | 3232                                                                                | 1517                                                                                | 0                                                                                   | 3289                                                                                |
| Flt Permitted           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                    | 0.950                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.950                                                                               |
| Satd. Flow (perm)       | 3315                                                                              | 3086                                                                              | 0                                                                                 | 3211                                                                              | 3293                                                                              | 1454                                                                              | 0                                                                                  | 3305                                                                                | 3232                                                                                | 1492                                                                                | 0                                                                                   | 3279                                                                                |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Satd. Flow (RTOR)       |                                                                                   | 47                                                                                |                                                                                   |                                                                                   |                                                                                   | 269                                                                               |                                                                                    |                                                                                     |                                                                                     | 267                                                                                 |                                                                                     |                                                                                     |
| Link Speed (k/h)        |                                                                                   | 60                                                                                |                                                                                   |                                                                                   | 60                                                                                |                                                                                   |                                                                                    |                                                                                     | 80                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Link Distance (m)       |                                                                                   | 243.4                                                                             |                                                                                   |                                                                                   | 525.1                                                                             |                                                                                   |                                                                                    |                                                                                     | 473.0                                                                               |                                                                                     |                                                                                     |                                                                                     |
| Travel Time (s)         |                                                                                   | 14.6                                                                              |                                                                                   |                                                                                   | 31.5                                                                              |                                                                                   |                                                                                    |                                                                                     | 21.3                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Confl. Peds. (#/hr)     | 1                                                                                 |                                                                                   | 9                                                                                 | 9                                                                                 |                                                                                   | 1                                                                                 |                                                                                    | 4                                                                                   |                                                                                     | 3                                                                                   |                                                                                     | 3                                                                                   |
| Confl. Bikes (#/hr)     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | 1                                                                                   |                                                                                     |                                                                                     |
| Peak Hour Factor        | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                               | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                |
| Heavy Vehicles (%)      | 1%                                                                                | 3%                                                                                | 0%                                                                                | 3%                                                                                | 5%                                                                                | 5%                                                                                | 0%                                                                                 | 2%                                                                                  | 7%                                                                                  | 2%                                                                                  | 0%                                                                                  | 2%                                                                                  |
| Adj. Flow (vph)         | 238                                                                               | 36                                                                                | 47                                                                                | 33                                                                                | 23                                                                                | 23                                                                                | 24                                                                                 | 54                                                                                  | 342                                                                                 | 46                                                                                  | 1                                                                                   | 64                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 238                                                                               | 83                                                                                | 0                                                                                 | 33                                                                                | 23                                                                                | 23                                                                                | 0                                                                                  | 78                                                                                  | 342                                                                                 | 46                                                                                  | 0                                                                                   | 65                                                                                  |
| Turn Type               | Prot                                                                              | NA                                                                                |                                                                                   | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                               | Prot                                                                                | NA                                                                                  | Perm                                                                                | Prot                                                                                | Prot                                                                                |
| Protected Phases        | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                  | 5                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   | 1                                                                                   |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 8                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 | 8                                                                                 | 5                                                                                  | 5                                                                                   | 2                                                                                   | 2                                                                                   | 1                                                                                   | 1                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 10.0                                                                              |                                                                                   | 5.0                                                                               | 10.0                                                                              | 10.0                                                                              | 5.0                                                                                | 5.0                                                                                 | 15.0                                                                                | 15.0                                                                                | 5.0                                                                                 | 5.0                                                                                 |
| Minimum Split (s)       | 11.5                                                                              | 41.5                                                                              |                                                                                   | 11.5                                                                              | 41.5                                                                              | 41.5                                                                              | 11.6                                                                               | 11.6                                                                                | 41.7                                                                                | 41.7                                                                                | 11.6                                                                                | 11.6                                                                                |
| Total Split (s)         | 31.5                                                                              | 31.5                                                                              |                                                                                   | 16.5                                                                              | 26.5                                                                              | 26.5                                                                              | 16.6                                                                               | 16.6                                                                                | 36.7                                                                                | 36.7                                                                                | 26.6                                                                                | 26.6                                                                                |
| Total Split (%)         | 26.0%                                                                             | 26.0%                                                                             |                                                                                   | 13.6%                                                                             | 21.8%                                                                             | 21.8%                                                                             | 13.7%                                                                              | 13.7%                                                                               | 30.3%                                                                               | 30.3%                                                                               | 21.9%                                                                               | 21.9%                                                                               |
| Maximum Green (s)       | 25.0                                                                              | 25.0                                                                              |                                                                                   | 10.0                                                                              | 20.0                                                                              | 20.0                                                                              | 10.0                                                                               | 10.0                                                                                | 30.0                                                                                | 30.0                                                                                | 20.0                                                                                | 20.0                                                                                |
| Yellow Time (s)         | 3.7                                                                               | 3.7                                                                               |                                                                                   | 3.7                                                                               | 3.7                                                                               | 3.7                                                                               | 4.6                                                                                | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 |
| All-Red Time (s)        | 2.8                                                                               | 2.8                                                                               |                                                                                   | 2.8                                                                               | 2.8                                                                               | 2.8                                                                               | 2.0                                                                                | 2.0                                                                                 | 2.1                                                                                 | 2.1                                                                                 | 2.0                                                                                 | 2.0                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 |
| Total Lost Time (s)     | 6.5                                                                               | 6.5                                                                               |                                                                                   | 6.5                                                                               | 6.5                                                                               | 6.5                                                                               |                                                                                    | 6.6                                                                                 | 6.7                                                                                 | 6.7                                                                                 |                                                                                     | 6.6                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                               | Lead                                                                                | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lead                                                                                |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              |                                                                                   | None                                                                              | None                                                                              | None                                                                              | None                                                                               | None                                                                                | Min                                                                                 | Min                                                                                 | None                                                                                | None                                                                                |
| Walk Time (s)           |                                                                                   | 10.0                                                                              |                                                                                   |                                                                                   | 10.0                                                                              | 10.0                                                                              |                                                                                    |                                                                                     | 10.0                                                                                | 10.0                                                                                |                                                                                     |                                                                                     |
| Flash Dont Walk (s)     |                                                                                   | 25.0                                                                              |                                                                                   |                                                                                   | 25.0                                                                              | 25.0                                                                              |                                                                                    |                                                                                     | 25.0                                                                                | 25.0                                                                                |                                                                                     |                                                                                     |
| Pedestrian Calls (#/hr) |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |
| Act Effect Green (s)    | 13.3                                                                              | 14.8                                                                              |                                                                                   | 7.1                                                                               | 11.5                                                                              | 11.5                                                                              |                                                                                    | 8.2                                                                                 | 30.7                                                                                | 30.7                                                                                |                                                                                     | 7.8                                                                                 |
| Actuated g/C Ratio      | 0.17                                                                              | 0.19                                                                              |                                                                                   | 0.09                                                                              | 0.15                                                                              | 0.15                                                                              |                                                                                    | 0.11                                                                                | 0.40                                                                                | 0.40                                                                                |                                                                                     | 0.10                                                                                |

2: Limebank Road & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Existing Traffic  
PM Peak Hour



| Lane Group              | SBT   | SBR   |
|-------------------------|-------|-------|
| Lane Configurations     | ↑↑    | ↑     |
| Traffic Volume (vph)    | 873   | 502   |
| Future Volume (vph)     | 873   | 502   |
| Ideal Flow (vphpl)      | 1800  | 1800  |
| Storage Length (m)      |       | 230.0 |
| Storage Lanes           |       | 1     |
| Taper Length (m)        |       |       |
| Lane Util. Factor       | 0.95  | 1.00  |
| Ped Bike Factor         |       | 0.98  |
| Frt                     |       | 0.850 |
| Flt Protected           |       |       |
| Satd. Flow (prot)       | 3424  | 1532  |
| Flt Permitted           |       |       |
| Satd. Flow (perm)       | 3424  | 1507  |
| Right Turn on Red       |       | Yes   |
| Satd. Flow (RTOR)       |       | 558   |
| Link Speed (k/h)        | 80    |       |
| Link Distance (m)       | 635.3 |       |
| Travel Time (s)         | 28.6  |       |
| Confl. Peds. (#/hr)     |       | 4     |
| Confl. Bikes (#/hr)     |       |       |
| Peak Hour Factor        | 0.90  | 0.90  |
| Heavy Vehicles (%)      | 1%    | 1%    |
| Adj. Flow (vph)         | 970   | 558   |
| Shared Lane Traffic (%) |       |       |
| Lane Group Flow (vph)   | 970   | 558   |
| Turn Type               | NA    | Perm  |
| Protected Phases        | 6     |       |
| Permitted Phases        |       | 6     |
| Detector Phase          | 6     | 6     |
| Switch Phase            |       |       |
| Minimum Initial (s)     | 15.0  | 15.0  |
| Minimum Split (s)       | 41.7  | 41.7  |
| Total Split (s)         | 46.7  | 46.7  |
| Total Split (%)         | 38.5% | 38.5% |
| Maximum Green (s)       | 40.0  | 40.0  |
| Yellow Time (s)         | 4.6   | 4.6   |
| All-Red Time (s)        | 2.1   | 2.1   |
| Lost Time Adjust (s)    | 0.0   | 0.0   |
| Total Lost Time (s)     | 6.7   | 6.7   |
| Lead/Lag                | Lag   | Lag   |
| Lead-Lag Optimize?      | Yes   | Yes   |
| Vehicle Extension (s)   | 3.0   | 3.0   |
| Recall Mode             | Min   | Min   |
| Walk Time (s)           | 10.0  | 10.0  |
| Flash Dont Walk (s)     | 25.0  | 25.0  |
| Pedestrian Calls (#/hr) | 0     | 0     |
| Act Effct Green (s)     | 30.4  | 30.4  |
| Actuated g/C Ratio      | 0.39  | 0.39  |

2: Limebank Road & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Existing Traffic  
PM Peak Hour

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBU                                                                                | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBU                                                                                 | SBL                                                                                 |
| v/c Ratio              | 0.42                                                                              | 0.13                                                                              |                                                                                   | 0.11                                                                              | 0.05                                                                              | 0.05                                                                              |                                                                                    | 0.22                                                                                | 0.27                                                                                | 0.06                                                                                |                                                                                     | 0.20                                                                                |
| Control Delay          | 37.4                                                                              | 18.5                                                                              |                                                                                   | 42.6                                                                              | 39.9                                                                              | 0.2                                                                               |                                                                                    | 41.3                                                                                | 18.5                                                                                | 0.1                                                                                 |                                                                                     | 41.7                                                                                |
| Queue Delay            | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 |
| Total Delay            | 37.4                                                                              | 18.5                                                                              |                                                                                   | 42.6                                                                              | 39.9                                                                              | 0.2                                                                               |                                                                                    | 41.3                                                                                | 18.5                                                                                | 0.1                                                                                 |                                                                                     | 41.7                                                                                |
| LOS                    | D                                                                                 | B                                                                                 |                                                                                   | D                                                                                 | D                                                                                 | A                                                                                 |                                                                                    | D                                                                                   | B                                                                                   | A                                                                                   |                                                                                     | D                                                                                   |
| Approach Delay         |                                                                                   | 32.5                                                                              |                                                                                   |                                                                                   | 29.5                                                                              |                                                                                   |                                                                                    |                                                                                     | 20.5                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS           |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Queue Length 50th (m)  | 20.0                                                                              | 2.7                                                                               |                                                                                   | 2.8                                                                               | 1.8                                                                               | 0.0                                                                               |                                                                                    | 6.6                                                                                 | 21.2                                                                                | 0.0                                                                                 |                                                                                     | 5.5                                                                                 |
| Queue Length 95th (m)  | 34.0                                                                              | 9.6                                                                               |                                                                                   | 7.8                                                                               | 6.1                                                                               | 0.0                                                                               |                                                                                    | 14.5                                                                                | 33.8                                                                                | 0.0                                                                                 |                                                                                     | 12.7                                                                                |
| Internal Link Dist (m) |                                                                                   | 219.4                                                                             |                                                                                   |                                                                                   | 501.1                                                                             |                                                                                   |                                                                                    |                                                                                     | 449.0                                                                               |                                                                                     |                                                                                     |                                                                                     |
| Turn Bay Length (m)    | 100.0                                                                             |                                                                                   |                                                                                   | 95.0                                                                              |                                                                                   | 60.0                                                                              |                                                                                    | 205.0                                                                               |                                                                                     | 180.0                                                                               |                                                                                     | 255.0                                                                               |
| Base Capacity (vph)    | 1225                                                                              | 1616                                                                              |                                                                                   | 480                                                                               | 971                                                                               | 618                                                                               |                                                                                    | 488                                                                                 | 1593                                                                                | 871                                                                                 |                                                                                     | 971                                                                                 |
| Starvation Cap Reductn | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Storage Cap Reductn    | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Reduced v/c Ratio      | 0.19                                                                              | 0.05                                                                              |                                                                                   | 0.07                                                                              | 0.02                                                                              | 0.04                                                                              |                                                                                    | 0.16                                                                                | 0.21                                                                                | 0.05                                                                                |                                                                                     | 0.07                                                                                |

Intersection Summary

Area Type: Other

Cycle Length: 121.3

Actuated Cycle Length: 77.6

Natural Cycle: 110

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 21.3

Intersection LOS: C

Intersection Capacity Utilization 71.2%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 2: Limebank Road & Spratt Road

|                                                                                        |                                                                                        |                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |  Ø3 |  Ø4 |
| 26.6 s                                                                                 | 36.7 s                                                                                 | 16.5 s                                                                                 | 31.5 s                                                                                   |
|  Ø5 |  Ø6 |  Ø7 |  Ø8 |
| 16.6 s                                                                                 | 46.7 s                                                                                 | 31.5 s                                                                                 | 26.5 s                                                                                   |

2: Limebank Road & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Existing Traffic  
PM Peak Hour



| Lane Group             | SBT   | SBR   |
|------------------------|-------|-------|
| v/c Ratio              | 0.72  | 0.60  |
| Control Delay          | 25.4  | 5.0   |
| Queue Delay            | 0.0   | 0.0   |
| Total Delay            | 25.4  | 5.0   |
| LOS                    | C     | A     |
| Approach Delay         | 18.9  |       |
| Approach LOS           | B     |       |
| Queue Length 50th (m)  | 75.6  | 0.0   |
| Queue Length 95th (m)  | 107.1 | 20.5  |
| Internal Link Dist (m) | 611.3 |       |
| Turn Bay Length (m)    |       | 230.0 |
| Base Capacity (vph)    | 1996  | 1111  |
| Starvation Cap Reductn | 0     | 0     |
| Spillback Cap Reductn  | 0     | 0     |
| Storage Cap Reductn    | 0     | 0     |
| Reduced v/c Ratio      | 0.49  | 0.50  |
| Intersection Summary   |       |       |

3: Urbandale Plaza & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Existing Traffic  
PM Peak Hour

|                         |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBT                                                                               | EBR                                                                               | WBU                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBR                                                                                 |
| Lane Configurations     | ↑↑                                                                                |                                                                                   |                                                                                   | ↘                                                                                 | ↑↑                                                                                | ↘                                                                                 | ↘                                                                                   |
| Traffic Volume (vph)    | 282                                                                               | 36                                                                                | 2                                                                                 | 44                                                                                | 526                                                                               | 70                                                                                | 4                                                                                   |
| Future Volume (vph)     | 282                                                                               | 36                                                                                | 2                                                                                 | 44                                                                                | 526                                                                               | 70                                                                                | 4                                                                                   |
| Ideal Flow (vphpl)      | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                                |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                                |
| Ped Bike Factor         | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                     |
| Frt                     | 0.983                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                               |
| Flt Protected           |                                                                                   |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   | 0.950                                                                             |                                                                                     |
| Satd. Flow (prot)       | 3359                                                                              | 0                                                                                 | 0                                                                                 | 1729                                                                              | 3424                                                                              | 1712                                                                              | 1547                                                                                |
| Flt Permitted           |                                                                                   |                                                                                   |                                                                                   | 0.540                                                                             |                                                                                   | 0.950                                                                             |                                                                                     |
| Satd. Flow (perm)       | 3359                                                                              | 0                                                                                 | 0                                                                                 | 979                                                                               | 3424                                                                              | 1712                                                                              | 1547                                                                                |
| Right Turn on Red       |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | Yes                                                                                 |
| Satd. Flow (RTOR)       | 26                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 4                                                                                   |
| Link Speed (k/h)        | 60                                                                                |                                                                                   |                                                                                   |                                                                                   | 60                                                                                | 50                                                                                |                                                                                     |
| Link Distance (m)       | 254.5                                                                             |                                                                                   |                                                                                   |                                                                                   | 243.4                                                                             | 128.6                                                                             |                                                                                     |
| Travel Time (s)         | 15.3                                                                              |                                                                                   |                                                                                   |                                                                                   | 14.6                                                                              | 9.3                                                                               |                                                                                     |
| Confl. Peds. (#/hr)     |                                                                                   | 3                                                                                 |                                                                                   | 3                                                                                 |                                                                                   |                                                                                   |                                                                                     |
| Peak Hour Factor        | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                                |
| Heavy Vehicles (%)      | 1%                                                                                | 0%                                                                                | 0%                                                                                | 0%                                                                                | 1%                                                                                | 1%                                                                                | 0%                                                                                  |
| Adj. Flow (vph)         | 313                                                                               | 40                                                                                | 2                                                                                 | 49                                                                                | 584                                                                               | 78                                                                                | 4                                                                                   |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |
| Lane Group Flow (vph)   | 353                                                                               | 0                                                                                 | 0                                                                                 | 51                                                                                | 584                                                                               | 78                                                                                | 4                                                                                   |
| Turn Type               | NA                                                                                |                                                                                   | Perm                                                                              | Perm                                                                              | NA                                                                                | Perm                                                                              | Perm                                                                                |
| Protected Phases        | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   | 6                                                                                 | 6                                                                                 |                                                                                   | 8                                                                                 | 8                                                                                   |
| Detector Phase          | 2                                                                                 |                                                                                   | 6                                                                                 | 6                                                                                 | 6                                                                                 | 8                                                                                 | 8                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |
| Minimum Initial (s)     | 10.0                                                                              |                                                                                   | 10.0                                                                              | 10.0                                                                              | 10.0                                                                              | 5.0                                                                               | 5.0                                                                                 |
| Minimum Split (s)       | 24.0                                                                              |                                                                                   | 32.0                                                                              | 32.0                                                                              | 32.0                                                                              | 32.0                                                                              | 32.0                                                                                |
| Total Split (s)         | 48.0                                                                              |                                                                                   | 48.0                                                                              | 48.0                                                                              | 48.0                                                                              | 32.0                                                                              | 32.0                                                                                |
| Total Split (%)         | 60.0%                                                                             |                                                                                   | 60.0%                                                                             | 60.0%                                                                             | 60.0%                                                                             | 40.0%                                                                             | 40.0%                                                                               |
| Maximum Green (s)       | 42.0                                                                              |                                                                                   | 42.0                                                                              | 42.0                                                                              | 42.0                                                                              | 26.0                                                                              | 26.0                                                                                |
| Yellow Time (s)         | 3.7                                                                               |                                                                                   | 3.7                                                                               | 3.7                                                                               | 3.7                                                                               | 3.3                                                                               | 3.3                                                                                 |
| All-Red Time (s)        | 2.3                                                                               |                                                                                   | 2.3                                                                               | 2.3                                                                               | 2.3                                                                               | 2.7                                                                               | 2.7                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 |
| Total Lost Time (s)     | 6.0                                                                               |                                                                                   |                                                                                   | 6.0                                                                               | 6.0                                                                               | 6.0                                                                               | 6.0                                                                                 |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 |
| Recall Mode             | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             | C-Max                                                                             | None                                                                              | None                                                                                |
| Walk Time (s)           | 7.0                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 7.0                                                                               | 7.0                                                                                 |
| Flash Dont Walk (s)     | 10.0                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 19.0                                                                              | 19.0                                                                                |
| Pedestrian Calls (#/hr) | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                   |
| Act Effect Green (s)    | 62.5                                                                              |                                                                                   |                                                                                   | 62.5                                                                              | 62.5                                                                              | 9.0                                                                               | 9.0                                                                                 |
| Actuated g/C Ratio      | 0.78                                                                              |                                                                                   |                                                                                   | 0.78                                                                              | 0.78                                                                              | 0.11                                                                              | 0.11                                                                                |
| v/c Ratio               | 0.13                                                                              |                                                                                   |                                                                                   | 0.07                                                                              | 0.22                                                                              | 0.41                                                                              | 0.02                                                                                |
| Control Delay           | 3.1                                                                               |                                                                                   |                                                                                   | 3.7                                                                               | 3.5                                                                               | 38.5                                                                              | 19.8                                                                                |
| Queue Delay             | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 |
| Total Delay             | 3.1                                                                               |                                                                                   |                                                                                   | 3.7                                                                               | 3.5                                                                               | 38.5                                                                              | 19.8                                                                                |

3: Urbandale Plaza & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Existing Traffic  
PM Peak Hour

|                        | →     | ↘   | ↶   | ↙    | ←     | ↵     | ↗    |
|------------------------|-------|-----|-----|------|-------|-------|------|
| Lane Group             | EBT   | EBR | WBU | WBL  | WBT   | NBL   | NBR  |
| LOS                    | A     |     |     | A    | A     | D     | B    |
| Approach Delay         | 3.1   |     |     |      | 3.6   | 37.6  |      |
| Approach LOS           | A     |     |     |      | A     | D     |      |
| Queue Length 50th (m)  | 6.0   |     |     | 1.7  | 11.7  | 11.2  | 0.0  |
| Queue Length 95th (m)  | 11.5  |     |     | 5.2  | 20.3  | 22.6  | 2.5  |
| Internal Link Dist (m) | 230.5 |     |     |      | 219.4 | 104.6 |      |
| Turn Bay Length (m)    |       |     |     |      |       |       |      |
| Base Capacity (vph)    | 2630  |     |     | 765  | 2675  | 556   | 505  |
| Starvation Cap Reductn | 0     |     |     | 0    | 0     | 0     | 0    |
| Spillback Cap Reductn  | 0     |     |     | 0    | 0     | 0     | 0    |
| Storage Cap Reductn    | 0     |     |     | 0    | 0     | 0     | 0    |
| Reduced v/c Ratio      | 0.13  |     |     | 0.07 | 0.22  | 0.14  | 0.01 |

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.41

Intersection Signal Delay: 6.0

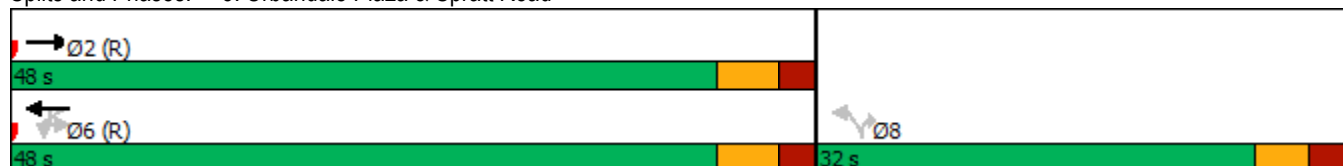
Intersection LOS: A

Intersection Capacity Utilization 41.7%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 3: Urbandale Plaza & Spratt Road



## Future (2031) Background Traffic

1: Limebank Road & Leitrim Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Background Traffic

AM Peak Hour

|                         |  |  |  |  |  |  |   |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)    | 3                                                                                 | 240                                                                               | 28                                                                                | 241                                                                               | 124                                                                               | 203                                                                               | 6                                                                                   | 1271                                                                                | 600                                                                                 | 199                                                                                 | 332                                                                                 | 7                                                                                   |
| Future Volume (vph)     | 3                                                                                 | 240                                                                               | 28                                                                                | 241                                                                               | 124                                                                               | 203                                                                               | 6                                                                                   | 1271                                                                                | 600                                                                                 | 199                                                                                 | 332                                                                                 | 7                                                                                   |
| Ideal Flow (vphpl)      | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                |
| Storage Length (m)      | 130.0                                                                             |                                                                                   | 130.0                                                                             | 120.0                                                                             |                                                                                   | 150.0                                                                             | 195.0                                                                               |                                                                                     | 180.0                                                                               | 210.0                                                                               |                                                                                     | 185.0                                                                               |
| Storage Lanes           | 2                                                                                 |                                                                                   | 1                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 2                                                                                   |                                                                                     | 1                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (m)        | 7.6                                                                               |                                                                                   |                                                                                   | 7.6                                                                               |                                                                                   |                                                                                   | 7.6                                                                                 |                                                                                     |                                                                                     | 7.6                                                                                 |                                                                                     |                                                                                     |
| Lane Util. Factor       | 0.97                                                                              | 1.00                                                                              | 1.00                                                                              | 0.97                                                                              | 1.00                                                                              | 1.00                                                                              | 0.97                                                                                | 0.95                                                                                | 1.00                                                                                | 0.97                                                                                | 0.95                                                                                | 1.00                                                                                |
| Ped Bike Factor         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     | 0.99                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |
| Frt                     |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 3354                                                                              | 1820                                                                              | 1031                                                                              | 2942                                                                              | 1733                                                                              | 1488                                                                              | 3354                                                                                | 3357                                                                                | 1419                                                                                | 3077                                                                                | 3357                                                                                | 1547                                                                                |
| Flt Permitted           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 3354                                                                              | 1820                                                                              | 1031                                                                              | 2942                                                                              | 1733                                                                              | 1488                                                                              | 3354                                                                                | 3357                                                                                | 1400                                                                                | 3076                                                                                | 3357                                                                                | 1547                                                                                |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   |                                                                                   | 188                                                                               |                                                                                   |                                                                                   | 192                                                                               |                                                                                     |                                                                                     | 365                                                                                 |                                                                                     |                                                                                     | 190                                                                                 |
| Link Speed (k/h)        |                                                                                   | 80                                                                                |                                                                                   |                                                                                   | 80                                                                                |                                                                                   |                                                                                     | 80                                                                                  |                                                                                     |                                                                                     | 80                                                                                  |                                                                                     |
| Link Distance (m)       |                                                                                   | 395.5                                                                             |                                                                                   |                                                                                   | 472.5                                                                             |                                                                                   |                                                                                     | 509.3                                                                               |                                                                                     |                                                                                     | 517.2                                                                               |                                                                                     |
| Travel Time (s)         |                                                                                   | 17.8                                                                              |                                                                                   |                                                                                   | 21.3                                                                              |                                                                                   |                                                                                     | 22.9                                                                                |                                                                                     |                                                                                     | 23.3                                                                                |                                                                                     |
| Confl. Peds. (#/hr)     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     |                                                                                     |
| Peak Hour Factor        | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Heavy Vehicles (%)      | 0%                                                                                | 0%                                                                                | 50%                                                                               | 14%                                                                               | 5%                                                                                | 4%                                                                                | 0%                                                                                  | 3%                                                                                  | 9%                                                                                  | 9%                                                                                  | 3%                                                                                  | 0%                                                                                  |
| Adj. Flow (vph)         | 3                                                                                 | 240                                                                               | 28                                                                                | 241                                                                               | 124                                                                               | 203                                                                               | 6                                                                                   | 1271                                                                                | 600                                                                                 | 199                                                                                 | 332                                                                                 | 7                                                                                   |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 3                                                                                 | 240                                                                               | 28                                                                                | 241                                                                               | 124                                                                               | 203                                                                               | 6                                                                                   | 1271                                                                                | 600                                                                                 | 199                                                                                 | 332                                                                                 | 7                                                                                   |
| Turn Type               | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                                | NA                                                                                  | Perm                                                                                | Prot                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases        | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                     |                                                                                     | 2                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |
| Detector Phase          | 7                                                                                 | 4                                                                                 | 4                                                                                 | 3                                                                                 | 8                                                                                 | 8                                                                                 | 5                                                                                   | 2                                                                                   | 2                                                                                   | 1                                                                                   | 6                                                                                   | 6                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 10.0                                                                              | 10.0                                                                              | 5.0                                                                               | 10.0                                                                              | 10.0                                                                              | 5.0                                                                                 | 21.0                                                                                | 21.0                                                                                | 5.0                                                                                 | 21.0                                                                                | 21.0                                                                                |
| Minimum Split (s)       | 11.1                                                                              | 30.8                                                                              | 30.8                                                                              | 11.1                                                                              | 30.8                                                                              | 30.8                                                                              | 11.6                                                                                | 27.6                                                                                | 27.6                                                                                | 11.6                                                                                | 27.6                                                                                | 27.6                                                                                |
| Total Split (s)         | 12.0                                                                              | 31.0                                                                              | 31.0                                                                              | 20.0                                                                              | 39.0                                                                              | 39.0                                                                              | 12.0                                                                                | 61.0                                                                                | 61.0                                                                                | 18.0                                                                                | 67.0                                                                                | 67.0                                                                                |
| Total Split (%)         | 9.2%                                                                              | 23.8%                                                                             | 23.8%                                                                             | 15.4%                                                                             | 30.0%                                                                             | 30.0%                                                                             | 9.2%                                                                                | 46.9%                                                                               | 46.9%                                                                               | 13.8%                                                                               | 51.5%                                                                               | 51.5%                                                                               |
| Maximum Green (s)       | 5.9                                                                               | 24.2                                                                              | 24.2                                                                              | 13.9                                                                              | 32.2                                                                              | 32.2                                                                              | 5.4                                                                                 | 54.4                                                                                | 54.4                                                                                | 11.4                                                                                | 60.4                                                                                | 60.4                                                                                |
| Yellow Time (s)         | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 |
| All-Red Time (s)        | 1.9                                                                               | 2.6                                                                               | 2.6                                                                               | 1.9                                                                               | 2.6                                                                               | 2.6                                                                               | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     | 6.1                                                                               | 6.8                                                                               | 6.8                                                                               | 6.1                                                                               | 6.8                                                                               | 6.8                                                                               | 6.6                                                                                 | 6.6                                                                                 | 6.6                                                                                 | 6.6                                                                                 | 6.6                                                                                 | 6.6                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                                | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                                | Min                                                                                 | Min                                                                                 | None                                                                                | Min                                                                                 | Min                                                                                 |
| Walk Time (s)           |                                                                                   | 7.0                                                                               | 7.0                                                                               |                                                                                   | 7.0                                                                               | 7.0                                                                               |                                                                                     | 7.0                                                                                 | 7.0                                                                                 |                                                                                     | 7.0                                                                                 | 7.0                                                                                 |
| Flash Dont Walk (s)     |                                                                                   | 17.0                                                                              | 17.0                                                                              |                                                                                   | 17.0                                                                              | 17.0                                                                              |                                                                                     | 14.0                                                                                | 14.0                                                                                |                                                                                     | 14.0                                                                                | 14.0                                                                                |
| Pedestrian Calls (#/hr) |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Act Effect Green (s)    | 5.7                                                                               | 20.3                                                                              | 20.3                                                                              | 13.2                                                                              | 37.5                                                                              | 37.5                                                                              | 5.4                                                                                 | 52.0                                                                                | 52.0                                                                                | 11.0                                                                                | 67.4                                                                                | 67.4                                                                                |
| Actuated g/C Ratio      | 0.05                                                                              | 0.17                                                                              | 0.17                                                                              | 0.11                                                                              | 0.31                                                                              | 0.31                                                                              | 0.04                                                                                | 0.42                                                                                | 0.42                                                                                | 0.09                                                                                | 0.55                                                                                | 0.55                                                                                |
| v/c Ratio               | 0.02                                                                              | 0.80                                                                              | 0.09                                                                              | 0.76                                                                              | 0.23                                                                              | 0.35                                                                              | 0.04                                                                                | 0.90                                                                                | 0.75                                                                                | 0.72                                                                                | 0.18                                                                                | 0.01                                                                                |

1: Limebank Road & Leitrim Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Background Traffic

AM Peak Hour

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Control Delay          | 59.7                                                                              | 69.9                                                                              | 0.5                                                                               | 70.7                                                                              | 35.2                                                                              | 7.7                                                                               | 60.3                                                                               | 42.9                                                                                | 18.0                                                                                | 71.6                                                                                | 15.4                                                                                | 0.0                                                                                 |
| Queue Delay            | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay            | 59.7                                                                              | 69.9                                                                              | 0.5                                                                               | 70.7                                                                              | 35.2                                                                              | 7.7                                                                               | 60.3                                                                               | 42.9                                                                                | 18.0                                                                                | 71.6                                                                                | 15.4                                                                                | 0.0                                                                                 |
| LOS                    | E                                                                                 | E                                                                                 | A                                                                                 | E                                                                                 | D                                                                                 | A                                                                                 | E                                                                                  | D                                                                                   | B                                                                                   | E                                                                                   | B                                                                                   | A                                                                                   |
| Approach Delay         | 62.6                                                                              |                                                                                   |                                                                                   | 40.4                                                                              |                                                                                   |                                                                                   | 35.0                                                                               |                                                                                     |                                                                                     | 36.0                                                                                |                                                                                     |                                                                                     |
| Approach LOS           | E                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | C                                                                                  |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |
| Queue Length 50th (m)  | 0.4                                                                               | 58.2                                                                              | 0.0                                                                               | 30.8                                                                              | 22.5                                                                              | 1.9                                                                               | 0.7                                                                                | 153.3                                                                               | 50.4                                                                                | 25.5                                                                                | 20.2                                                                                | 0.0                                                                                 |
| Queue Length 95th (m)  | 2.0                                                                               | 87.2                                                                              | 0.0                                                                               | #49.5                                                                             | 43.3                                                                              | 21.4                                                                              | 3.1                                                                                | #195.0                                                                              | 102.9                                                                               | #42.2                                                                               | 35.8                                                                                | 0.0                                                                                 |
| Internal Link Dist (m) | 371.5                                                                             |                                                                                   |                                                                                   | 448.5                                                                             |                                                                                   |                                                                                   | 485.3                                                                              |                                                                                     |                                                                                     | 493.2                                                                               |                                                                                     |                                                                                     |
| Turn Bay Length (m)    | 130.0                                                                             |                                                                                   | 130.0                                                                             | 120.0                                                                             |                                                                                   | 150.0                                                                             | 195.0                                                                              |                                                                                     | 180.0                                                                               | 210.0                                                                               |                                                                                     | 185.0                                                                               |
| Base Capacity (vph)    | 162                                                                               | 361                                                                               | 355                                                                               | 335                                                                               | 534                                                                               | 591                                                                               | 148                                                                                | 1498                                                                                | 827                                                                                 | 287                                                                                 | 1853                                                                                | 939                                                                                 |
| Starvation Cap Reductn | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio      | 0.02                                                                              | 0.66                                                                              | 0.08                                                                              | 0.72                                                                              | 0.23                                                                              | 0.34                                                                              | 0.04                                                                               | 0.85                                                                                | 0.73                                                                                | 0.69                                                                                | 0.18                                                                                | 0.01                                                                                |

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 122.9

Natural Cycle: 105

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 38.4

Intersection LOS: D

Intersection Capacity Utilization 87.7%

ICU Level of Service E

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Limebank Road & Leitrim Road

|                                                                                        |                                                                                        |                                                                                         |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |  Ø3 |  Ø4 |
| 18 s                                                                                   | 61 s                                                                                   | 20 s                                                                                    | 31 s                                                                                     |
|  Ø5 |  Ø6 |  Ø7  |  Ø8 |
| 12 s                                                                                   | 67 s                                                                                   | 12 s                                                                                    | 39 s                                                                                     |

2: Limebank Road & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Background Traffic

AM Peak Hour

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBU                                                                                | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 |
| Lane Configurations     |  |  |                                                                                   |  |  |  |                                                                                    |  |  |  |  |  |
| Traffic Volume (vph)    | 515                                                                               | 171                                                                               | 31                                                                                | 108                                                                               | 98                                                                                | 174                                                                               | 21                                                                                 | 32                                                                                  | 864                                                                                 | 159                                                                                 | 91                                                                                  | 276                                                                                 |
| Future Volume (vph)     | 515                                                                               | 171                                                                               | 31                                                                                | 108                                                                               | 98                                                                                | 174                                                                               | 21                                                                                 | 32                                                                                  | 864                                                                                 | 159                                                                                 | 91                                                                                  | 276                                                                                 |
| Ideal Flow (vphpl)      | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                               | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                |
| Storage Length (m)      | 100.0                                                                             |                                                                                   | 0.0                                                                               | 95.0                                                                              |                                                                                   | 60.0                                                                              |                                                                                    | 205.0                                                                               |                                                                                     | 180.0                                                                               | 255.0                                                                               |                                                                                     |
| Storage Lanes           | 2                                                                                 |                                                                                   | 0                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 |                                                                                    | 2                                                                                   |                                                                                     | 1                                                                                   | 2                                                                                   |                                                                                     |
| Taper Length (m)        | 7.6                                                                               |                                                                                   |                                                                                   | 7.6                                                                               |                                                                                   |                                                                                   |                                                                                    | 7.6                                                                                 |                                                                                     |                                                                                     | 7.6                                                                                 |                                                                                     |
| Lane Util. Factor       | 0.97                                                                              | 0.95                                                                              | 0.95                                                                              | 0.97                                                                              | 0.95                                                                              | 1.00                                                                              | 0.95                                                                               | 0.97                                                                                | 0.95                                                                                | 1.00                                                                                | 0.97                                                                                | 0.95                                                                                |
| Ped Bike Factor         | 0.87                                                                              | 1.00                                                                              |                                                                                   | 0.98                                                                              |                                                                                   | 0.90                                                                              |                                                                                    | 0.99                                                                                |                                                                                     | 0.96                                                                                | 0.98                                                                                |                                                                                     |
| Frt                     |                                                                                   | 0.977                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                    |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     |
| Flt Protected           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                    | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |
| Satd. Flow (prot)       | 3321                                                                              | 3292                                                                              | 0                                                                                 | 3022                                                                              | 3357                                                                              | 1419                                                                              | 0                                                                                  | 3256                                                                                | 3390                                                                                | 1419                                                                                | 2968                                                                                | 3144                                                                                |
| Flt Permitted           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                    | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |
| Satd. Flow (perm)       | 2888                                                                              | 3292                                                                              | 0                                                                                 | 2949                                                                              | 3357                                                                              | 1278                                                                              | 0                                                                                  | 3220                                                                                | 3390                                                                                | 1357                                                                                | 2920                                                                                | 3144                                                                                |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Satd. Flow (RTOR)       |                                                                                   | 12                                                                                |                                                                                   |                                                                                   |                                                                                   | 190                                                                               |                                                                                    |                                                                                     |                                                                                     | 189                                                                                 |                                                                                     |                                                                                     |
| Link Speed (k/h)        |                                                                                   | 60                                                                                |                                                                                   |                                                                                   | 60                                                                                |                                                                                   |                                                                                    |                                                                                     | 80                                                                                  |                                                                                     |                                                                                     | 80                                                                                  |
| Link Distance (m)       |                                                                                   | 243.4                                                                             |                                                                                   |                                                                                   | 525.1                                                                             |                                                                                   |                                                                                    |                                                                                     | 473.0                                                                               |                                                                                     |                                                                                     | 635.3                                                                               |
| Travel Time (s)         |                                                                                   | 14.6                                                                              |                                                                                   |                                                                                   | 31.5                                                                              |                                                                                   |                                                                                    |                                                                                     | 21.3                                                                                |                                                                                     |                                                                                     | 28.6                                                                                |
| Confl. Peds. (#/hr)     | 61                                                                                |                                                                                   | 13                                                                                | 13                                                                                |                                                                                   | 61                                                                                |                                                                                    | 11                                                                                  |                                                                                     | 22                                                                                  | 22                                                                                  |                                                                                     |
| Peak Hour Factor        | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Heavy Vehicles (%)      | 1%                                                                                | 2%                                                                                | 3%                                                                                | 11%                                                                               | 3%                                                                                | 9%                                                                                | 0%                                                                                 | 5%                                                                                  | 2%                                                                                  | 9%                                                                                  | 13%                                                                                 | 10%                                                                                 |
| Adj. Flow (vph)         | 515                                                                               | 171                                                                               | 31                                                                                | 108                                                                               | 98                                                                                | 174                                                                               | 21                                                                                 | 32                                                                                  | 864                                                                                 | 159                                                                                 | 91                                                                                  | 276                                                                                 |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 515                                                                               | 202                                                                               | 0                                                                                 | 108                                                                               | 98                                                                                | 174                                                                               | 0                                                                                  | 53                                                                                  | 864                                                                                 | 159                                                                                 | 91                                                                                  | 276                                                                                 |
| Turn Type               | Prot                                                                              | NA                                                                                |                                                                                   | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                               | Prot                                                                                | NA                                                                                  | Perm                                                                                | Prot                                                                                | NA                                                                                  |
| Protected Phases        | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                  | 5                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   | 6                                                                                   |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 8                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 | 8                                                                                 | 5                                                                                  | 5                                                                                   | 2                                                                                   | 2                                                                                   | 1                                                                                   | 6                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 10.0                                                                              |                                                                                   | 5.0                                                                               | 10.0                                                                              | 10.0                                                                              | 5.0                                                                                | 5.0                                                                                 | 15.0                                                                                | 15.0                                                                                | 5.0                                                                                 | 15.0                                                                                |
| Minimum Split (s)       | 11.5                                                                              | 41.5                                                                              |                                                                                   | 11.5                                                                              | 41.5                                                                              | 41.5                                                                              | 11.6                                                                               | 11.6                                                                                | 41.7                                                                                | 41.7                                                                                | 11.6                                                                                | 41.7                                                                                |
| Total Split (s)         | 56.5                                                                              | 26.5                                                                              |                                                                                   | 31.5                                                                              | 26.5                                                                              | 26.5                                                                              | 16.6                                                                               | 16.6                                                                                | 61.7                                                                                | 61.7                                                                                | 26.6                                                                                | 31.7                                                                                |
| Total Split (%)         | 33.0%                                                                             | 15.5%                                                                             |                                                                                   | 18.4%                                                                             | 15.5%                                                                             | 15.5%                                                                             | 9.7%                                                                               | 9.7%                                                                                | 36.0%                                                                               | 36.0%                                                                               | 15.5%                                                                               | 18.5%                                                                               |
| Maximum Green (s)       | 50.0                                                                              | 20.0                                                                              |                                                                                   | 25.0                                                                              | 20.0                                                                              | 20.0                                                                              | 10.0                                                                               | 10.0                                                                                | 55.0                                                                                | 55.0                                                                                | 20.0                                                                                | 25.0                                                                                |
| Yellow Time (s)         | 3.7                                                                               | 3.7                                                                               |                                                                                   | 3.7                                                                               | 3.7                                                                               | 3.7                                                                               | 4.6                                                                                | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 |
| All-Red Time (s)        | 2.8                                                                               | 2.8                                                                               |                                                                                   | 2.8                                                                               | 2.8                                                                               | 2.8                                                                               | 2.0                                                                                | 2.0                                                                                 | 2.1                                                                                 | 2.1                                                                                 | 2.0                                                                                 | 2.1                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     | 6.5                                                                               | 6.5                                                                               |                                                                                   | 6.5                                                                               | 6.5                                                                               | 6.5                                                                               |                                                                                    | 6.6                                                                                 | 6.7                                                                                 | 6.7                                                                                 | 6.6                                                                                 | 6.7                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                               | Lead                                                                                | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | Min                                                                               | None                                                                              |                                                                                   | None                                                                              | None                                                                              | None                                                                              | None                                                                               | None                                                                                | Min                                                                                 | Min                                                                                 | None                                                                                | Min                                                                                 |
| Walk Time (s)           |                                                                                   | 10.0                                                                              |                                                                                   |                                                                                   | 10.0                                                                              | 10.0                                                                              |                                                                                    |                                                                                     | 10.0                                                                                | 10.0                                                                                |                                                                                     | 10.0                                                                                |
| Flash Dont Walk (s)     |                                                                                   | 25.0                                                                              |                                                                                   |                                                                                   | 25.0                                                                              | 25.0                                                                              |                                                                                    |                                                                                     | 25.0                                                                                | 25.0                                                                                |                                                                                     | 25.0                                                                                |
| Pedestrian Calls (#/hr) |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Act Effect Green (s)    | 23.6                                                                              | 24.6                                                                              |                                                                                   | 9.8                                                                               | 10.8                                                                              | 10.8                                                                              |                                                                                    | 7.5                                                                                 | 34.5                                                                                | 34.5                                                                                | 9.2                                                                                 | 39.3                                                                                |
| Actuated g/C Ratio      | 0.22                                                                              | 0.23                                                                              |                                                                                   | 0.09                                                                              | 0.10                                                                              | 0.10                                                                              |                                                                                    | 0.07                                                                                | 0.33                                                                                | 0.33                                                                                | 0.09                                                                                | 0.37                                                                                |
| v/c Ratio               | 0.69                                                                              | 0.26                                                                              |                                                                                   | 0.38                                                                              | 0.28                                                                              | 0.58                                                                              |                                                                                    | 0.23                                                                                | 0.78                                                                                | 0.28                                                                                | 0.35                                                                                | 0.23                                                                                |

2: Limebank Road & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Background Traffic  
AM Peak Hour

|                         |       |
|-------------------------|-------|
| Lane Group              | SBR   |
| Lane Configurations     |       |
| Traffic Volume (vph)    | 102   |
| Future Volume (vph)     | 102   |
| Ideal Flow (vphpl)      | 1800  |
| Storage Length (m)      | 230.0 |
| Storage Lanes           | 1     |
| Taper Length (m)        |       |
| Lane Util. Factor       | 1.00  |
| Ped Bike Factor         | 0.97  |
| Frt                     | 0.850 |
| Flt Protected           |       |
| Satd. Flow (prot)       | 1502  |
| Flt Permitted           |       |
| Satd. Flow (perm)       | 1460  |
| Right Turn on Red       | Yes   |
| Satd. Flow (RTOR)       | 147   |
| Link Speed (k/h)        |       |
| Link Distance (m)       |       |
| Travel Time (s)         |       |
| Confl. Peds. (#/hr)     | 11    |
| Peak Hour Factor        | 1.00  |
| Heavy Vehicles (%)      | 3%    |
| Adj. Flow (vph)         | 102   |
| Shared Lane Traffic (%) |       |
| Lane Group Flow (vph)   | 102   |
| Turn Type               | Perm  |
| Protected Phases        |       |
| Permitted Phases        | 6     |
| Detector Phase          | 6     |
| Switch Phase            |       |
| Minimum Initial (s)     | 15.0  |
| Minimum Split (s)       | 41.7  |
| Total Split (s)         | 31.7  |
| Total Split (%)         | 18.5% |
| Maximum Green (s)       | 25.0  |
| Yellow Time (s)         | 4.6   |
| All-Red Time (s)        | 2.1   |
| Lost Time Adjust (s)    | 0.0   |
| Total Lost Time (s)     | 6.7   |
| Lead/Lag                | Lag   |
| Lead-Lag Optimize?      | Yes   |
| Vehicle Extension (s)   | 3.0   |
| Recall Mode             | Min   |
| Walk Time (s)           | 10.0  |
| Flash Dont Walk (s)     | 25.0  |
| Pedestrian Calls (#/hr) | 0     |
| Act Effct Green (s)     | 39.3  |
| Actuated g/C Ratio      | 0.37  |
| v/c Ratio               | 0.16  |

2: Limebank Road & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Background Traffic  
AM Peak Hour

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBU                                                                                | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 |
| Control Delay          | 43.9                                                                              | 33.7                                                                              |                                                                                   | 52.6                                                                              | 50.4                                                                              | 14.1                                                                              |                                                                                    | 53.8                                                                                | 37.7                                                                                | 3.4                                                                                 | 53.1                                                                                | 24.8                                                                                |
| Queue Delay            | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay            | 43.9                                                                              | 33.7                                                                              |                                                                                   | 52.6                                                                              | 50.4                                                                              | 14.1                                                                              |                                                                                    | 53.8                                                                                | 37.7                                                                                | 3.4                                                                                 | 53.1                                                                                | 24.8                                                                                |
| LOS                    | D                                                                                 | C                                                                                 |                                                                                   | D                                                                                 | D                                                                                 | B                                                                                 |                                                                                    | D                                                                                   | D                                                                                   | A                                                                                   | D                                                                                   | C                                                                                   |
| Approach Delay         | 41.1                                                                              |                                                                                   |                                                                                   | 34.4                                                                              |                                                                                   |                                                                                   | 33.5                                                                               |                                                                                     |                                                                                     | 25.3                                                                                |                                                                                     |                                                                                     |
| Approach LOS           | D                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                  |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Queue Length 50th (m)  | 48.6                                                                              | 16.3                                                                              |                                                                                   | 10.6                                                                              | 9.6                                                                               | 0.0                                                                               |                                                                                    | 5.2                                                                                 | 80.7                                                                                | 0.0                                                                                 | 8.9                                                                                 | 20.5                                                                                |
| Queue Length 95th (m)  | 81.8                                                                              | 32.3                                                                              |                                                                                   | 23.4                                                                              | 21.9                                                                              | 17.3                                                                              |                                                                                    | 13.8                                                                                | 124.8                                                                               | 8.8                                                                                 | 20.6                                                                                | 36.1                                                                                |
| Internal Link Dist (m) | 219.4                                                                             |                                                                                   |                                                                                   | 501.1                                                                             |                                                                                   |                                                                                   | 449.0                                                                              |                                                                                     |                                                                                     | 611.3                                                                               |                                                                                     |                                                                                     |
| Turn Bay Length (m)    | 100.0                                                                             |                                                                                   |                                                                                   | 95.0                                                                              |                                                                                   | 60.0                                                                              |                                                                                    | 205.0                                                                               |                                                                                     | 180.0                                                                               | 255.0                                                                               |                                                                                     |
| Base Capacity (vph)    | 1623                                                                              | 1454                                                                              |                                                                                   | 738                                                                               | 656                                                                               | 402                                                                               |                                                                                    | 318                                                                                 | 1822                                                                                | 816                                                                                 | 580                                                                                 | 1997                                                                                |
| Starvation Cap Reductn | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn    | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio      | 0.32                                                                              | 0.14                                                                              |                                                                                   | 0.15                                                                              | 0.15                                                                              | 0.43                                                                              |                                                                                    | 0.17                                                                                | 0.47                                                                                | 0.19                                                                                | 0.16                                                                                | 0.14                                                                                |

Intersection Summary

Area Type: Other

Cycle Length: 171.3

Actuated Cycle Length: 105.1

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 34.2

Intersection LOS: C

Intersection Capacity Utilization 96.3%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 2: Limebank Road & Spratt Road

|                                                                                        |                                                                                        |                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |  Ø3 |  Ø4 |
| 26.6 s                                                                                 | 61.7 s                                                                                 | 31.5 s                                                                                 | 26.5 s                                                                                   |
|  Ø5 |  Ø6 |  Ø7 |  Ø8 |
| 16.6 s                                                                                 | 31.7 s                                                                                 | 56.5 s                                                                                 | 26.5 s                                                                                   |

2: Limebank Road & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Background Traffic  
AM Peak Hour



|                        |       |
|------------------------|-------|
| Lane Group             | SBR   |
| Control Delay          | 1.7   |
| Queue Delay            | 0.0   |
| Total Delay            | 1.7   |
| LOS                    | A     |
| Approach Delay         |       |
| Approach LOS           |       |
| Queue Length 50th (m)  | 0.0   |
| Queue Length 95th (m)  | 3.6   |
| Internal Link Dist (m) |       |
| Turn Bay Length (m)    | 230.0 |
| Base Capacity (vph)    | 980   |
| Starvation Cap Reductn | 0     |
| Spillback Cap Reductn  | 0     |
| Storage Cap Reductn    | 0     |
| Reduced v/c Ratio      | 0.10  |
| Intersection Summary   |       |

3: Urbandale Plaza & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Background Traffic  
AM Peak Hour

|                         | →     | ↘    | ↙     | ←     | ↖     | ↗     |
|-------------------------|-------|------|-------|-------|-------|-------|
| Lane Group              | EBT   | EBR  | WBL   | WBT   | NBL   | NBR   |
| Lane Configurations     | ↑↑    |      | ↘     | ↑↑    | ↘     | ↗     |
| Traffic Volume (vph)    | 714   | 17   | 21    | 211   | 12    | 3     |
| Future Volume (vph)     | 714   | 17   | 21    | 211   | 12    | 3     |
| Ideal Flow (vphpl)      | 1800  | 1800 | 1800  | 1800  | 1800  | 1800  |
| Lane Util. Factor       | 0.95  | 0.95 | 1.00  | 0.95  | 1.00  | 1.00  |
| Ped Bike Factor         | 1.00  |      | 0.99  |       | 1.00  | 0.98  |
| Frt                     | 0.997 |      |       |       |       | 0.850 |
| Flt Protected           |       |      | 0.950 |       | 0.950 |       |
| Satd. Flow (prot)       | 3410  | 0    | 1662  | 3262  | 1530  | 1547  |
| Flt Permitted           |       |      | 0.374 |       | 0.950 |       |
| Satd. Flow (perm)       | 3410  | 0    | 648   | 3262  | 1529  | 1523  |
| Right Turn on Red       |       | Yes  |       |       |       | Yes   |
| Satd. Flow (RTOR)       | 4     |      |       |       |       | 3     |
| Link Speed (k/h)        | 60    |      |       | 60    | 50    |       |
| Link Distance (m)       | 254.5 |      |       | 243.4 | 128.6 |       |
| Travel Time (s)         | 15.3  |      |       | 14.6  | 9.3   |       |
| Confl. Peds. (#/hr)     |       | 13   | 13    |       | 1     | 4     |
| Peak Hour Factor        | 1.00  | 1.00 | 1.00  | 1.00  | 1.00  | 1.00  |
| Heavy Vehicles (%)      | 1%    | 0%   | 4%    | 6%    | 13%   | 0%    |
| Adj. Flow (vph)         | 714   | 17   | 21    | 211   | 12    | 3     |
| Shared Lane Traffic (%) |       |      |       |       |       |       |
| Lane Group Flow (vph)   | 731   | 0    | 21    | 211   | 12    | 3     |
| Turn Type               | NA    |      | Perm  | NA    | Perm  | Perm  |
| Protected Phases        | 2     |      |       | 6     |       |       |
| Permitted Phases        |       |      | 6     |       | 8     | 8     |
| Detector Phase          | 2     |      | 6     | 6     | 8     | 8     |
| Switch Phase            |       |      |       |       |       |       |
| Minimum Initial (s)     | 10.0  |      | 10.0  | 10.0  | 5.0   | 5.0   |
| Minimum Split (s)       | 24.0  |      | 24.0  | 24.0  | 32.0  | 32.0  |
| Total Split (s)         | 48.0  |      | 48.0  | 48.0  | 32.0  | 32.0  |
| Total Split (%)         | 60.0% |      | 60.0% | 60.0% | 40.0% | 40.0% |
| Maximum Green (s)       | 42.0  |      | 42.0  | 42.0  | 26.0  | 26.0  |
| Yellow Time (s)         | 3.7   |      | 3.7   | 3.7   | 3.3   | 3.3   |
| All-Red Time (s)        | 2.3   |      | 2.3   | 2.3   | 2.7   | 2.7   |
| Lost Time Adjust (s)    | 0.0   |      | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)     | 6.0   |      | 6.0   | 6.0   | 6.0   | 6.0   |
| Lead/Lag                |       |      |       |       |       |       |
| Lead-Lag Optimize?      |       |      |       |       |       |       |
| Vehicle Extension (s)   | 3.0   |      | 3.0   | 3.0   | 3.0   | 3.0   |
| Recall Mode             | C-Max |      | C-Max | C-Max | None  | None  |
| Walk Time (s)           | 7.0   |      | 0.0   | 0.0   | 7.0   | 7.0   |
| Flash Dont Walk (s)     | 10.0  |      | 0.0   | 0.0   | 19.0  | 19.0  |
| Pedestrian Calls (#/hr) | 0     |      | 0     | 0     | 0     | 0     |
| Act Effect Green (s)    | 76.1  |      | 76.1  | 76.1  | 6.3   | 6.3   |
| Actuated g/C Ratio      | 0.95  |      | 0.95  | 0.95  | 0.08  | 0.08  |
| v/c Ratio               | 0.23  |      | 0.03  | 0.07  | 0.10  | 0.02  |
| Control Delay           | 1.0   |      | 1.4   | 0.9   | 35.6  | 23.7  |
| Queue Delay             | 0.0   |      | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Delay             | 1.0   |      | 1.4   | 0.9   | 35.6  | 23.7  |

3: Urbandale Plaza & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Background Traffic  
AM Peak Hour

|                        | →     | ↘   | ↙    | ←     | ↖     | ↗    |
|------------------------|-------|-----|------|-------|-------|------|
| Lane Group             | EBT   | EBR | WBL  | WBT   | NBL   | NBR  |
| LOS                    | A     |     | A    | A     | D     | C    |
| Approach Delay         | 1.0   |     |      | 0.9   | 33.2  |      |
| Approach LOS           | A     |     |      | A     | C     |      |
| Queue Length 50th (m)  | 0.0   |     | 0.0  | 0.0   | 1.7   | 0.0  |
| Queue Length 95th (m)  | 19.1  |     | 2.1  | 5.6   | 6.5   | 2.4  |
| Internal Link Dist (m) | 230.5 |     |      | 219.4 | 104.6 |      |
| Turn Bay Length (m)    |       |     |      |       |       |      |
| Base Capacity (vph)    | 3243  |     | 616  | 3102  | 496   | 497  |
| Starvation Cap Reductn | 0     |     | 0    | 0     | 0     | 0    |
| Spillback Cap Reductn  | 0     |     | 0    | 0     | 0     | 0    |
| Storage Cap Reductn    | 0     |     | 0    | 0     | 0     | 0    |
| Reduced v/c Ratio      | 0.23  |     | 0.03 | 0.07  | 0.02  | 0.01 |

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.23

Intersection Signal Delay: 1.5

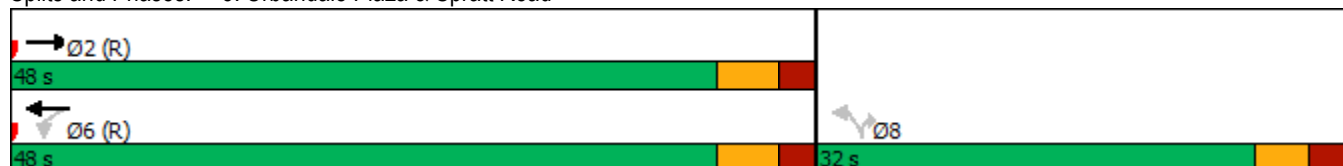
Intersection LOS: A

Intersection Capacity Utilization 37.8%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 3: Urbandale Plaza & Spratt Road



4: Limebank Road & Realigned Leitrim Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Background Traffic

AM Peak Hour

|                         |  |  |  |  |  |  |   |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |  |  |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (vph)    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 15                                                                                | 0                                                                                 | 5                                                                                 | 0                                                                                   | 1833                                                                                | 0                                                                                   | 113                                                                                 | 533                                                                                 | 0                                                                                   |
| Future Volume (vph)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 15                                                                                | 0                                                                                 | 5                                                                                 | 0                                                                                   | 1833                                                                                | 0                                                                                   | 113                                                                                 | 533                                                                                 | 0                                                                                   |
| Ideal Flow (vphpl)      | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                |
| Storage Length (m)      | 90.0                                                                              |                                                                                   | 0.0                                                                               | 125.0                                                                             |                                                                                   | 0.0                                                                               | 90.0                                                                                |                                                                                     | 160.0                                                                               | 90.0                                                                                |                                                                                     | 0.0                                                                                 |
| Storage Lanes           | 1                                                                                 |                                                                                   | 0                                                                                 | 2                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                   |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (m)        | 7.6                                                                               |                                                                                   |                                                                                   | 2.5                                                                               |                                                                                   |                                                                                   | 7.6                                                                                 |                                                                                     |                                                                                     | 7.6                                                                                 |                                                                                     |                                                                                     |
| Lane Util. Factor       | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 0.97                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                | 0.95                                                                                |
| Frt                     |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Flt Protected           |                                                                                   |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 1625                                                                              | 3087                                                                              | 0                                                                                 | 3354                                                                              | 2939                                                                              | 0                                                                                 | 1625                                                                                | 3357                                                                                | 1820                                                                                | 1729                                                                                | 3172                                                                                | 0                                                                                   |
| Flt Permitted           |                                                                                   |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     | 0.089                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 1625                                                                              | 3087                                                                              | 0                                                                                 | 3354                                                                              | 2939                                                                              | 0                                                                                 | 1625                                                                                | 3357                                                                                | 1820                                                                                | 162                                                                                 | 3172                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 260                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Link Speed (k/h)        |                                                                                   | 48                                                                                |                                                                                   |                                                                                   | 48                                                                                |                                                                                   |                                                                                     | 80                                                                                  |                                                                                     |                                                                                     | 80                                                                                  |                                                                                     |
| Link Distance (m)       |                                                                                   | 472.7                                                                             |                                                                                   |                                                                                   | 426.7                                                                             |                                                                                   |                                                                                     | 635.3                                                                               |                                                                                     |                                                                                     | 509.3                                                                               |                                                                                     |
| Travel Time (s)         |                                                                                   | 35.5                                                                              |                                                                                   |                                                                                   | 32.0                                                                              |                                                                                   |                                                                                     | 28.6                                                                                |                                                                                     |                                                                                     | 22.9                                                                                |                                                                                     |
| Peak Hour Factor        | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Heavy Vehicles (%)      | 12%                                                                               | 12%                                                                               | 12%                                                                               | 0%                                                                                | 12%                                                                               | 0%                                                                                | 12%                                                                                 | 3%                                                                                  | 0%                                                                                  | 0%                                                                                  | 9%                                                                                  | 12%                                                                                 |
| Adj. Flow (vph)         | 0                                                                                 | 0                                                                                 | 0                                                                                 | 15                                                                                | 0                                                                                 | 5                                                                                 | 0                                                                                   | 1833                                                                                | 0                                                                                   | 113                                                                                 | 533                                                                                 | 0                                                                                   |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 15                                                                                | 5                                                                                 | 0                                                                                 | 0                                                                                   | 1833                                                                                | 0                                                                                   | 113                                                                                 | 533                                                                                 | 0                                                                                   |
| Turn Type               | pm+pt                                                                             |                                                                                   |                                                                                   | Prot                                                                              | NA                                                                                |                                                                                   | pm+pt                                                                               | NA                                                                                  | Perm                                                                                | pm+pt                                                                               | NA                                                                                  |                                                                                     |
| Protected Phases        | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases        | 4                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 2                                                                                   |                                                                                     | 2                                                                                   | 6                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                   | 2                                                                                   | 2                                                                                   | 1                                                                                   | 6                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 10.0                                                                              |                                                                                   | 5.0                                                                               | 10.0                                                                              |                                                                                   | 5.0                                                                                 | 10.0                                                                                | 10.0                                                                                | 5.0                                                                                 | 10.0                                                                                |                                                                                     |
| Minimum Split (s)       | 12.5                                                                              | 43.6                                                                              |                                                                                   | 12.5                                                                              | 43.6                                                                              |                                                                                   | 12.4                                                                                | 39.3                                                                                | 39.3                                                                                | 12.4                                                                                | 39.3                                                                                |                                                                                     |
| Total Split (s)         | 12.5                                                                              | 43.6                                                                              |                                                                                   | 12.5                                                                              | 43.6                                                                              |                                                                                   | 12.4                                                                                | 39.3                                                                                | 39.3                                                                                | 12.4                                                                                | 39.3                                                                                |                                                                                     |
| Total Split (%)         | 11.6%                                                                             | 40.4%                                                                             |                                                                                   | 11.6%                                                                             | 40.4%                                                                             |                                                                                   | 11.5%                                                                               | 36.5%                                                                               | 36.5%                                                                               | 11.5%                                                                               | 36.5%                                                                               |                                                                                     |
| Maximum Green (s)       | 5.0                                                                               | 36.1                                                                              |                                                                                   | 5.0                                                                               | 36.1                                                                              |                                                                                   | 5.0                                                                                 | 31.9                                                                                | 31.9                                                                                | 5.0                                                                                 | 31.9                                                                                |                                                                                     |
| Yellow Time (s)         | 4.1                                                                               | 4.1                                                                               |                                                                                   | 4.1                                                                               | 4.1                                                                               |                                                                                   | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 |                                                                                     |
| All-Red Time (s)        | 3.4                                                                               | 3.4                                                                               |                                                                                   | 3.4                                                                               | 3.4                                                                               |                                                                                   | 2.4                                                                                 | 2.4                                                                                 | 2.4                                                                                 | 2.4                                                                                 | 2.4                                                                                 |                                                                                     |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     | 7.5                                                                               | 7.5                                                                               |                                                                                   | 7.5                                                                               | 7.5                                                                               |                                                                                   | 7.4                                                                                 | 7.4                                                                                 | 7.4                                                                                 | 7.4                                                                                 | 7.4                                                                                 |                                                                                     |
| Lead/Lag                | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                                | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lag                                                                                 |                                                                                     |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |                                                                                     |
| Recall Mode             | None                                                                              | None                                                                              |                                                                                   | None                                                                              | None                                                                              |                                                                                   | None                                                                                | Min                                                                                 | Min                                                                                 | None                                                                                | Min                                                                                 |                                                                                     |
| Walk Time (s)           |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                     | 7.0                                                                                 | 7.0                                                                                 |                                                                                     | 7.0                                                                                 |                                                                                     |
| Flash Dont Walk (s)     |                                                                                   | 29.1                                                                              |                                                                                   |                                                                                   | 29.1                                                                              |                                                                                   |                                                                                     | 24.9                                                                                | 24.9                                                                                |                                                                                     | 24.9                                                                                |                                                                                     |
| Pedestrian Calls (#/hr) |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |                                                                                     |
| Act Effect Green (s)    |                                                                                   |                                                                                   |                                                                                   | 6.0                                                                               | 10.2                                                                              |                                                                                   |                                                                                     | 37.4                                                                                |                                                                                     | 50.0                                                                                | 56.2                                                                                |                                                                                     |
| Actuated g/C Ratio      |                                                                                   |                                                                                   |                                                                                   | 0.10                                                                              | 0.17                                                                              |                                                                                   |                                                                                     | 0.62                                                                                |                                                                                     | 0.83                                                                                | 0.93                                                                                |                                                                                     |
| v/c Ratio               |                                                                                   |                                                                                   |                                                                                   | 0.05                                                                              | 0.01                                                                              |                                                                                   |                                                                                     | 0.88                                                                                |                                                                                     | 0.43                                                                                | 0.18                                                                                |                                                                                     |
| Control Delay           |                                                                                   |                                                                                   |                                                                                   | 23.9                                                                              | 0.0                                                                               |                                                                                   |                                                                                     | 19.2                                                                                |                                                                                     | 9.6                                                                                 | 1.8                                                                                 |                                                                                     |
| Queue Delay             |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                     | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |

4: Limebank Road & Realigned Leitrim Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Background Traffic  
AM Peak Hour

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Total Delay            |                                                                                   |                                                                                   |                                                                                   | 23.9                                                                              | 0.0                                                                               |                                                                                   |                                                                                     | 19.2                                                                                |                                                                                     | 9.6                                                                                 | 1.8                                                                                 |                                                                                     |
| LOS                    |                                                                                   |                                                                                   |                                                                                   | C                                                                                 | A                                                                                 |                                                                                   |                                                                                     | B                                                                                   |                                                                                     | A                                                                                   | A                                                                                   |                                                                                     |
| Approach Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 17.9                                                                              |                                                                                   |                                                                                     | 19.2                                                                                |                                                                                     |                                                                                     | 3.1                                                                                 |                                                                                     |
| Approach LOS           |                                                                                   |                                                                                   |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |
| Queue Length 50th (m)  |                                                                                   |                                                                                   |                                                                                   | 0.6                                                                               | 0.0                                                                               |                                                                                   |                                                                                     | 62.2                                                                                |                                                                                     | 0.4                                                                                 | 0.0                                                                                 |                                                                                     |
| Queue Length 95th (m)  |                                                                                   |                                                                                   |                                                                                   | 3.2                                                                               | 0.0                                                                               |                                                                                   |                                                                                     | #193.3                                                                              |                                                                                     | 14.9                                                                                | 19.7                                                                                |                                                                                     |
| Internal Link Dist (m) |                                                                                   | 448.7                                                                             |                                                                                   |                                                                                   | 402.7                                                                             |                                                                                   |                                                                                     | 611.3                                                                               |                                                                                     |                                                                                     | 485.3                                                                               |                                                                                     |
| Turn Bay Length (m)    |                                                                                   |                                                                                   |                                                                                   | 125.0                                                                             |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     | 90.0                                                                                |                                                                                     |                                                                                     |
| Base Capacity (vph)    |                                                                                   |                                                                                   |                                                                                   | 329                                                                               | 1880                                                                              |                                                                                   |                                                                                     | 2073                                                                                |                                                                                     | 264                                                                                 | 2944                                                                                |                                                                                     |
| Starvation Cap Reductn |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                     | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn  |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                     | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn    |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                     | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio      |                                                                                   |                                                                                   |                                                                                   | 0.05                                                                              | 0.00                                                                              |                                                                                   |                                                                                     | 0.88                                                                                |                                                                                     | 0.43                                                                                | 0.18                                                                                |                                                                                     |

Intersection Summary

Area Type: Other

Cycle Length: 107.8

Actuated Cycle Length: 60.6

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 15.0

Intersection LOS: B

Intersection Capacity Utilization 87.0%

ICU Level of Service E

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 4: Limebank Road & Realigned Leitrim Road

|                                                                                     |                                                                                     |                                                                                     |                                                                                      |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|  |  |  |  |
| Ø1                                                                                  | Ø2                                                                                  | Ø3                                                                                  | Ø4                                                                                   |
| 12.4 s                                                                              | 39.3 s                                                                              | 12.5 s                                                                              | 43.6 s                                                                               |
|  |  |  |  |
| Ø5                                                                                  | Ø6                                                                                  | Ø7                                                                                  | Ø8                                                                                   |
| 12.4 s                                                                              | 39.3 s                                                                              | 12.5 s                                                                              | 43.6 s                                                                               |

1: Limebank Road & Leitrim Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Background Traffic

PM Peak Hour

|                         |  |  |  |  |  |  |   |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)    | 11                                                                                | 190                                                                               | 30                                                                                | 484                                                                               | 277                                                                               | 212                                                                               | 4                                                                                   | 501                                                                                 | 242                                                                                 | 280                                                                                 | 1108                                                                                | 6                                                                                   |
| Future Volume (vph)     | 11                                                                                | 190                                                                               | 30                                                                                | 484                                                                               | 277                                                                               | 212                                                                               | 4                                                                                   | 501                                                                                 | 242                                                                                 | 280                                                                                 | 1108                                                                                | 6                                                                                   |
| Ideal Flow (vphpl)      | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                |
| Storage Length (m)      | 130.0                                                                             |                                                                                   | 130.0                                                                             | 120.0                                                                             |                                                                                   | 150.0                                                                             | 195.0                                                                               |                                                                                     | 180.0                                                                               | 210.0                                                                               |                                                                                     | 185.0                                                                               |
| Storage Lanes           | 2                                                                                 |                                                                                   | 1                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 2                                                                                   |                                                                                     | 1                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (m)        | 7.6                                                                               |                                                                                   |                                                                                   | 7.6                                                                               |                                                                                   |                                                                                   | 7.6                                                                                 |                                                                                     |                                                                                     | 7.6                                                                                 |                                                                                     |                                                                                     |
| Lane Util. Factor       | 0.97                                                                              | 1.00                                                                              | 1.00                                                                              | 0.97                                                                              | 1.00                                                                              | 1.00                                                                              | 0.97                                                                                | 0.95                                                                                | 1.00                                                                                | 0.97                                                                                | 0.95                                                                                | 1.00                                                                                |
| Ped Bike Factor         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     | 0.99                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |
| Frt                     |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 3354                                                                              | 1767                                                                              | 1381                                                                              | 3257                                                                              | 1802                                                                              | 1488                                                                              | 3354                                                                                | 3325                                                                                | 1419                                                                                | 3106                                                                                | 3424                                                                                | 1289                                                                                |
| Flt Permitted           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 3354                                                                              | 1767                                                                              | 1381                                                                              | 3257                                                                              | 1802                                                                              | 1488                                                                              | 3354                                                                                | 3325                                                                                | 1400                                                                                | 3101                                                                                | 3424                                                                                | 1289                                                                                |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   |                                                                                   | 232                                                                               |                                                                                   |                                                                                   | 212                                                                               |                                                                                     |                                                                                     | 242                                                                                 |                                                                                     |                                                                                     | 181                                                                                 |
| Link Speed (k/h)        |                                                                                   | 80                                                                                |                                                                                   |                                                                                   | 80                                                                                |                                                                                   |                                                                                     | 80                                                                                  |                                                                                     |                                                                                     | 80                                                                                  |                                                                                     |
| Link Distance (m)       |                                                                                   | 395.5                                                                             |                                                                                   |                                                                                   | 472.5                                                                             |                                                                                   |                                                                                     | 509.3                                                                               |                                                                                     |                                                                                     | 517.2                                                                               |                                                                                     |
| Travel Time (s)         |                                                                                   | 17.8                                                                              |                                                                                   |                                                                                   | 21.3                                                                              |                                                                                   |                                                                                     | 22.9                                                                                |                                                                                     |                                                                                     | 23.3                                                                                |                                                                                     |
| Confl. Peds. (#/hr)     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     |                                                                                     |
| Peak Hour Factor        | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Heavy Vehicles (%)      | 0%                                                                                | 3%                                                                                | 12%                                                                               | 3%                                                                                | 1%                                                                                | 4%                                                                                | 0%                                                                                  | 4%                                                                                  | 9%                                                                                  | 8%                                                                                  | 1%                                                                                  | 20%                                                                                 |
| Adj. Flow (vph)         | 11                                                                                | 190                                                                               | 30                                                                                | 484                                                                               | 277                                                                               | 212                                                                               | 4                                                                                   | 501                                                                                 | 242                                                                                 | 280                                                                                 | 1108                                                                                | 6                                                                                   |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 11                                                                                | 190                                                                               | 30                                                                                | 484                                                                               | 277                                                                               | 212                                                                               | 4                                                                                   | 501                                                                                 | 242                                                                                 | 280                                                                                 | 1108                                                                                | 6                                                                                   |
| Turn Type               | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                                | NA                                                                                  | Perm                                                                                | Prot                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases        | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                     |                                                                                     | 2                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |
| Detector Phase          | 7                                                                                 | 4                                                                                 | 4                                                                                 | 3                                                                                 | 8                                                                                 | 8                                                                                 | 5                                                                                   | 2                                                                                   | 2                                                                                   | 1                                                                                   | 6                                                                                   | 6                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 10.0                                                                              | 10.0                                                                              | 5.0                                                                               | 10.0                                                                              | 10.0                                                                              | 5.0                                                                                 | 21.0                                                                                | 21.0                                                                                | 5.0                                                                                 | 21.0                                                                                | 21.0                                                                                |
| Minimum Split (s)       | 11.1                                                                              | 30.8                                                                              | 30.8                                                                              | 11.1                                                                              | 30.8                                                                              | 30.8                                                                              | 11.6                                                                                | 27.6                                                                                | 27.6                                                                                | 11.6                                                                                | 27.6                                                                                | 27.6                                                                                |
| Total Split (s)         | 16.1                                                                              | 31.8                                                                              | 31.8                                                                              | 26.1                                                                              | 31.8                                                                              | 31.8                                                                              | 16.6                                                                                | 51.6                                                                                | 51.6                                                                                | 26.6                                                                                | 36.6                                                                                | 36.6                                                                                |
| Total Split (%)         | 11.8%                                                                             | 23.4%                                                                             | 23.4%                                                                             | 19.2%                                                                             | 23.4%                                                                             | 23.4%                                                                             | 12.2%                                                                               | 37.9%                                                                               | 37.9%                                                                               | 19.5%                                                                               | 26.9%                                                                               | 26.9%                                                                               |
| Maximum Green (s)       | 10.0                                                                              | 25.0                                                                              | 25.0                                                                              | 20.0                                                                              | 25.0                                                                              | 25.0                                                                              | 10.0                                                                                | 45.0                                                                                | 45.0                                                                                | 20.0                                                                                | 30.0                                                                                | 30.0                                                                                |
| Yellow Time (s)         | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 |
| All-Red Time (s)        | 1.9                                                                               | 2.6                                                                               | 2.6                                                                               | 1.9                                                                               | 2.6                                                                               | 2.6                                                                               | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     | 6.1                                                                               | 6.8                                                                               | 6.8                                                                               | 6.1                                                                               | 6.8                                                                               | 6.8                                                                               | 6.6                                                                                 | 6.6                                                                                 | 6.6                                                                                 | 6.6                                                                                 | 6.6                                                                                 | 6.6                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                                | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                                | Min                                                                                 | Min                                                                                 | None                                                                                | Min                                                                                 | Min                                                                                 |
| Walk Time (s)           |                                                                                   | 7.0                                                                               | 7.0                                                                               |                                                                                   | 7.0                                                                               | 7.0                                                                               |                                                                                     | 7.0                                                                                 | 7.0                                                                                 |                                                                                     | 7.0                                                                                 | 7.0                                                                                 |
| Flash Dont Walk (s)     |                                                                                   | 17.0                                                                              | 17.0                                                                              |                                                                                   | 17.0                                                                              | 17.0                                                                              |                                                                                     | 14.0                                                                                | 14.0                                                                                |                                                                                     | 14.0                                                                                | 14.0                                                                                |
| Pedestrian Calls (#/hr) |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Act Effect Green (s)    | 5.9                                                                               | 16.4                                                                              | 16.4                                                                              | 20.3                                                                              | 40.7                                                                              | 40.7                                                                              | 5.7                                                                                 | 24.0                                                                                | 24.0                                                                                | 14.6                                                                                | 43.1                                                                                | 43.1                                                                                |
| Actuated g/C Ratio      | 0.06                                                                              | 0.16                                                                              | 0.16                                                                              | 0.20                                                                              | 0.40                                                                              | 0.40                                                                              | 0.06                                                                                | 0.24                                                                                | 0.24                                                                                | 0.14                                                                                | 0.42                                                                                | 0.42                                                                                |
| v/c Ratio               | 0.06                                                                              | 0.67                                                                              | 0.07                                                                              | 0.75                                                                              | 0.38                                                                              | 0.29                                                                              | 0.02                                                                                | 0.64                                                                                | 0.47                                                                                | 0.63                                                                                | 0.76                                                                                | 0.01                                                                                |

1: Limebank Road & Leitrim Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Background Traffic  
PM Peak Hour

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Control Delay          | 51.5                                                                              | 53.0                                                                              | 0.3                                                                               | 48.3                                                                              | 25.9                                                                              | 4.9                                                                               | 51.8                                                                               | 40.1                                                                                | 7.8                                                                                 | 48.9                                                                                | 30.4                                                                                | 0.0                                                                                 |
| Queue Delay            | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay            | 51.5                                                                              | 53.0                                                                              | 0.3                                                                               | 48.3                                                                              | 25.9                                                                              | 4.9                                                                               | 51.8                                                                               | 40.1                                                                                | 7.8                                                                                 | 48.9                                                                                | 30.4                                                                                | 0.0                                                                                 |
| LOS                    | D                                                                                 | D                                                                                 | A                                                                                 | D                                                                                 | C                                                                                 | A                                                                                 | D                                                                                  | D                                                                                   | A                                                                                   | D                                                                                   | C                                                                                   | A                                                                                   |
| Approach Delay         | 46.1                                                                              |                                                                                   |                                                                                   | 32.5                                                                              |                                                                                   |                                                                                   | 29.7                                                                               |                                                                                     |                                                                                     | 33.9                                                                                |                                                                                     |                                                                                     |
| Approach LOS           | D                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                  |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Queue Length 50th (m)  | 1.0                                                                               | 34.2                                                                              | 0.0                                                                               | 44.6                                                                              | 34.5                                                                              | 0.0                                                                               | 0.3                                                                                | 46.3                                                                                | 0.0                                                                                 | 26.0                                                                                | 90.4                                                                                | 0.0                                                                                 |
| Queue Length 95th (m)  | 4.4                                                                               | 64.7                                                                              | 0.0                                                                               | #88.4                                                                             | 80.0                                                                              | 16.9                                                                              | 2.4                                                                                | 73.0                                                                                | 19.8                                                                                | 45.9                                                                                | 157.2                                                                               | 0.0                                                                                 |
| Internal Link Dist (m) | 371.5                                                                             |                                                                                   |                                                                                   | 448.5                                                                             |                                                                                   |                                                                                   | 485.3                                                                              |                                                                                     |                                                                                     | 493.2                                                                               |                                                                                     |                                                                                     |
| Turn Bay Length (m)    | 130.0                                                                             |                                                                                   | 130.0                                                                             | 120.0                                                                             |                                                                                   | 150.0                                                                             | 195.0                                                                              |                                                                                     | 180.0                                                                               | 210.0                                                                               |                                                                                     | 185.0                                                                               |
| Base Capacity (vph)    | 334                                                                               | 440                                                                               | 518                                                                               | 649                                                                               | 721                                                                               | 723                                                                               | 334                                                                                | 1491                                                                                | 761                                                                                 | 619                                                                                 | 1876                                                                                | 788                                                                                 |
| Starvation Cap Reductn | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio      | 0.03                                                                              | 0.43                                                                              | 0.06                                                                              | 0.75                                                                              | 0.38                                                                              | 0.29                                                                              | 0.01                                                                               | 0.34                                                                                | 0.32                                                                                | 0.45                                                                                | 0.59                                                                                | 0.01                                                                                |

Intersection Summary

Area Type: Other

Cycle Length: 136.1

Actuated Cycle Length: 101.7

Natural Cycle: 105

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 33.4

Intersection LOS: C

Intersection Capacity Utilization 83.4%

ICU Level of Service E

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Limebank Road & Leitrim Road

|                                                                                        |                                                                                        |                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |  Ø3 |  Ø4 |
| 26.6 s                                                                                 | 51.6 s                                                                                 | 26.1 s                                                                                 | 31.8 s                                                                                   |
|  Ø5 |  Ø6 |  Ø7 |  Ø8 |
| 16.6 s                                                                                 | 36.6 s                                                                                 | 16.1 s                                                                                 | 31.8 s                                                                                   |

2: Limebank Road & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Background Traffic

PM Peak Hour

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBU                                                                                | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBU                                                                                 | SBL                                                                                 |
| Lane Configurations     |  |  |                                                                                   |  |  |  |                                                                                    |  |  |  |                                                                                     |  |
| Traffic Volume (vph)    | 178                                                                               | 27                                                                                | 35                                                                                | 25                                                                                | 17                                                                                | 17                                                                                | 26                                                                                 | 41                                                                                  | 367                                                                                 | 34                                                                                  | 1                                                                                   | 48                                                                                  |
| Future Volume (vph)     | 178                                                                               | 27                                                                                | 35                                                                                | 25                                                                                | 17                                                                                | 17                                                                                | 26                                                                                 | 41                                                                                  | 367                                                                                 | 34                                                                                  | 1                                                                                   | 48                                                                                  |
| Ideal Flow (vphpl)      | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                               | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                |
| Storage Length (m)      | 100.0                                                                             |                                                                                   | 0.0                                                                               | 95.0                                                                              |                                                                                   | 60.0                                                                              |                                                                                    | 205.0                                                                               |                                                                                     | 180.0                                                                               |                                                                                     | 255.0                                                                               |
| Storage Lanes           | 2                                                                                 |                                                                                   | 0                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 |                                                                                    | 2                                                                                   |                                                                                     | 1                                                                                   |                                                                                     | 2                                                                                   |
| Taper Length (m)        | 7.6                                                                               |                                                                                   |                                                                                   | 7.6                                                                               |                                                                                   |                                                                                   |                                                                                    | 7.6                                                                                 |                                                                                     |                                                                                     |                                                                                     | 7.6                                                                                 |
| Lane Util. Factor       | 0.97                                                                              | 0.95                                                                              | 0.95                                                                              | 0.97                                                                              | 0.95                                                                              | 1.00                                                                              | 0.95                                                                               | 0.97                                                                                | 0.95                                                                                | 1.00                                                                                | 0.95                                                                                | 0.97                                                                                |
| Ped Bike Factor         | 1.00                                                                              | 0.99                                                                              |                                                                                   | 0.99                                                                              |                                                                                   | 0.99                                                                              |                                                                                    | 1.00                                                                                |                                                                                     | 0.98                                                                                |                                                                                     | 1.00                                                                                |
| Frt                     |                                                                                   | 0.915                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                    |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     |
| Flt Protected           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                    | 0.950                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.950                                                                               |
| Satd. Flow (prot)       | 3321                                                                              | 3086                                                                              | 0                                                                                 | 3257                                                                              | 3293                                                                              | 1473                                                                              | 0                                                                                  | 3314                                                                                | 3232                                                                                | 1517                                                                                | 0                                                                                   | 3290                                                                                |
| Flt Permitted           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                    | 0.950                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.950                                                                               |
| Satd. Flow (perm)       | 3315                                                                              | 3086                                                                              | 0                                                                                 | 3210                                                                              | 3293                                                                              | 1454                                                                              | 0                                                                                  | 3311                                                                                | 3232                                                                                | 1492                                                                                | 0                                                                                   | 3280                                                                                |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Satd. Flow (RTOR)       |                                                                                   | 35                                                                                |                                                                                   |                                                                                   |                                                                                   | 269                                                                               |                                                                                    |                                                                                     |                                                                                     | 267                                                                                 |                                                                                     |                                                                                     |
| Link Speed (k/h)        |                                                                                   | 60                                                                                |                                                                                   |                                                                                   | 60                                                                                |                                                                                   |                                                                                    |                                                                                     | 80                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Link Distance (m)       |                                                                                   | 243.4                                                                             |                                                                                   |                                                                                   | 525.1                                                                             |                                                                                   |                                                                                    |                                                                                     | 473.0                                                                               |                                                                                     |                                                                                     |                                                                                     |
| Travel Time (s)         |                                                                                   | 14.6                                                                              |                                                                                   |                                                                                   | 31.5                                                                              |                                                                                   |                                                                                    |                                                                                     | 21.3                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Confl. Peds. (#/hr)     | 1                                                                                 |                                                                                   | 9                                                                                 | 9                                                                                 |                                                                                   | 1                                                                                 |                                                                                    | 4                                                                                   |                                                                                     | 3                                                                                   |                                                                                     | 3                                                                                   |
| Confl. Bikes (#/hr)     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | 1                                                                                   |                                                                                     |                                                                                     |
| Peak Hour Factor        | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Heavy Vehicles (%)      | 1%                                                                                | 3%                                                                                | 0%                                                                                | 3%                                                                                | 5%                                                                                | 5%                                                                                | 0%                                                                                 | 2%                                                                                  | 7%                                                                                  | 2%                                                                                  | 0%                                                                                  | 2%                                                                                  |
| Adj. Flow (vph)         | 178                                                                               | 27                                                                                | 35                                                                                | 25                                                                                | 17                                                                                | 17                                                                                | 26                                                                                 | 41                                                                                  | 367                                                                                 | 34                                                                                  | 1                                                                                   | 48                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 178                                                                               | 62                                                                                | 0                                                                                 | 25                                                                                | 17                                                                                | 17                                                                                | 0                                                                                  | 67                                                                                  | 367                                                                                 | 34                                                                                  | 0                                                                                   | 49                                                                                  |
| Turn Type               | Prot                                                                              | NA                                                                                |                                                                                   | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                               | Prot                                                                                | NA                                                                                  | Perm                                                                                | Prot                                                                                | Prot                                                                                |
| Protected Phases        | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                  | 5                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   | 1                                                                                   |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 8                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 | 8                                                                                 | 5                                                                                  | 5                                                                                   | 2                                                                                   | 2                                                                                   | 1                                                                                   | 1                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 10.0                                                                              |                                                                                   | 5.0                                                                               | 10.0                                                                              | 10.0                                                                              | 5.0                                                                                | 5.0                                                                                 | 15.0                                                                                | 15.0                                                                                | 5.0                                                                                 | 5.0                                                                                 |
| Minimum Split (s)       | 11.5                                                                              | 41.5                                                                              |                                                                                   | 11.5                                                                              | 41.5                                                                              | 41.5                                                                              | 11.6                                                                               | 11.6                                                                                | 41.7                                                                                | 41.7                                                                                | 11.6                                                                                | 11.6                                                                                |
| Total Split (s)         | 31.5                                                                              | 31.5                                                                              |                                                                                   | 16.5                                                                              | 26.5                                                                              | 26.5                                                                              | 16.6                                                                               | 16.6                                                                                | 36.7                                                                                | 36.7                                                                                | 26.6                                                                                | 26.6                                                                                |
| Total Split (%)         | 26.0%                                                                             | 26.0%                                                                             |                                                                                   | 13.6%                                                                             | 21.8%                                                                             | 21.8%                                                                             | 13.7%                                                                              | 13.7%                                                                               | 30.3%                                                                               | 30.3%                                                                               | 21.9%                                                                               | 21.9%                                                                               |
| Maximum Green (s)       | 25.0                                                                              | 25.0                                                                              |                                                                                   | 10.0                                                                              | 20.0                                                                              | 20.0                                                                              | 10.0                                                                               | 10.0                                                                                | 30.0                                                                                | 30.0                                                                                | 20.0                                                                                | 20.0                                                                                |
| Yellow Time (s)         | 3.7                                                                               | 3.7                                                                               |                                                                                   | 3.7                                                                               | 3.7                                                                               | 3.7                                                                               | 4.6                                                                                | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 |
| All-Red Time (s)        | 2.8                                                                               | 2.8                                                                               |                                                                                   | 2.8                                                                               | 2.8                                                                               | 2.8                                                                               | 2.0                                                                                | 2.0                                                                                 | 2.1                                                                                 | 2.1                                                                                 | 2.0                                                                                 | 2.0                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 |
| Total Lost Time (s)     | 6.5                                                                               | 6.5                                                                               |                                                                                   | 6.5                                                                               | 6.5                                                                               | 6.5                                                                               |                                                                                    | 6.6                                                                                 | 6.7                                                                                 | 6.7                                                                                 |                                                                                     | 6.6                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                               | Lead                                                                                | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lead                                                                                |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              |                                                                                   | None                                                                              | None                                                                              | None                                                                              | None                                                                               | None                                                                                | Min                                                                                 | Min                                                                                 | None                                                                                | None                                                                                |
| Walk Time (s)           |                                                                                   | 10.0                                                                              |                                                                                   |                                                                                   | 10.0                                                                              | 10.0                                                                              |                                                                                    |                                                                                     | 10.0                                                                                | 10.0                                                                                |                                                                                     |                                                                                     |
| Flash Dont Walk (s)     |                                                                                   | 25.0                                                                              |                                                                                   |                                                                                   | 25.0                                                                              | 25.0                                                                              |                                                                                    |                                                                                     | 25.0                                                                                | 25.0                                                                                |                                                                                     |                                                                                     |
| Pedestrian Calls (#/hr) |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |
| Act Effect Green (s)    | 11.8                                                                              | 15.6                                                                              |                                                                                   | 6.7                                                                               | 11.0                                                                              | 11.0                                                                              |                                                                                    | 7.6                                                                                 | 37.7                                                                                | 37.7                                                                                |                                                                                     | 7.2                                                                                 |
| Actuated g/C Ratio      | 0.15                                                                              | 0.20                                                                              |                                                                                   | 0.08                                                                              | 0.14                                                                              | 0.14                                                                              |                                                                                    | 0.10                                                                                | 0.48                                                                                | 0.48                                                                                |                                                                                     | 0.09                                                                                |

2: Limebank Road & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Background Traffic  
PM Peak Hour



| Lane Group              | SBT   | SBR   |
|-------------------------|-------|-------|
| Lane Configurations     | ↑↑    | ↑     |
| Traffic Volume (vph)    | 1064  | 417   |
| Future Volume (vph)     | 1064  | 417   |
| Ideal Flow (vphpl)      | 1800  | 1800  |
| Storage Length (m)      |       | 230.0 |
| Storage Lanes           |       | 1     |
| Taper Length (m)        |       |       |
| Lane Util. Factor       | 0.95  | 1.00  |
| Ped Bike Factor         |       | 0.98  |
| Frt                     |       | 0.850 |
| Flt Protected           |       |       |
| Satd. Flow (prot)       | 3424  | 1532  |
| Flt Permitted           |       |       |
| Satd. Flow (perm)       | 3424  | 1507  |
| Right Turn on Red       |       | Yes   |
| Satd. Flow (RTOR)       |       | 417   |
| Link Speed (k/h)        | 80    |       |
| Link Distance (m)       | 635.3 |       |
| Travel Time (s)         | 28.6  |       |
| Confl. Peds. (#/hr)     |       | 4     |
| Confl. Bikes (#/hr)     |       |       |
| Peak Hour Factor        | 1.00  | 1.00  |
| Heavy Vehicles (%)      | 1%    | 1%    |
| Adj. Flow (vph)         | 1064  | 417   |
| Shared Lane Traffic (%) |       |       |
| Lane Group Flow (vph)   | 1064  | 417   |
| Turn Type               | NA    | Perm  |
| Protected Phases        | 6     |       |
| Permitted Phases        |       | 6     |
| Detector Phase          | 6     | 6     |
| Switch Phase            |       |       |
| Minimum Initial (s)     | 15.0  | 15.0  |
| Minimum Split (s)       | 41.7  | 41.7  |
| Total Split (s)         | 46.7  | 46.7  |
| Total Split (%)         | 38.5% | 38.5% |
| Maximum Green (s)       | 40.0  | 40.0  |
| Yellow Time (s)         | 4.6   | 4.6   |
| All-Red Time (s)        | 2.1   | 2.1   |
| Lost Time Adjust (s)    | 0.0   | 0.0   |
| Total Lost Time (s)     | 6.7   | 6.7   |
| Lead/Lag                | Lag   | Lag   |
| Lead-Lag Optimize?      | Yes   | Yes   |
| Vehicle Extension (s)   | 3.0   | 3.0   |
| Recall Mode             | Min   | Min   |
| Walk Time (s)           | 10.0  | 10.0  |
| Flash Dont Walk (s)     | 25.0  | 25.0  |
| Pedestrian Calls (#/hr) | 0     | 0     |
| Act Effct Green (s)     | 34.2  | 34.2  |
| Actuated g/C Ratio      | 0.43  | 0.43  |

2: Limebank Road & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Background Traffic  
PM Peak Hour

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBU                                                                                | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBU                                                                                 | SBL                                                                                 |
| v/c Ratio              | 0.36                                                                              | 0.10                                                                              |                                                                                   | 0.09                                                                              | 0.04                                                                              | 0.04                                                                              |                                                                                    | 0.21                                                                                | 0.24                                                                                | 0.04                                                                                |                                                                                     | 0.16                                                                                |
| Control Delay          | 38.5                                                                              | 18.7                                                                              |                                                                                   | 42.4                                                                              | 39.3                                                                              | 0.2                                                                               |                                                                                    | 41.3                                                                                | 15.7                                                                                | 0.1                                                                                 |                                                                                     | 41.7                                                                                |
| Queue Delay            | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 |
| Total Delay            | 38.5                                                                              | 18.7                                                                              |                                                                                   | 42.4                                                                              | 39.3                                                                              | 0.2                                                                               |                                                                                    | 41.3                                                                                | 15.7                                                                                | 0.1                                                                                 |                                                                                     | 41.7                                                                                |
| LOS                    | D                                                                                 | B                                                                                 |                                                                                   | D                                                                                 | D                                                                                 | A                                                                                 |                                                                                    | D                                                                                   | B                                                                                   | A                                                                                   |                                                                                     | D                                                                                   |
| Approach Delay         |                                                                                   | 33.4                                                                              |                                                                                   |                                                                                   | 29.4                                                                              |                                                                                   |                                                                                    |                                                                                     | 18.3                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS           |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Queue Length 50th (m)  | 15.6                                                                              | 1.8                                                                               |                                                                                   | 2.2                                                                               | 1.4                                                                               | 0.0                                                                               |                                                                                    | 5.9                                                                                 | 21.8                                                                                | 0.0                                                                                 |                                                                                     | 4.3                                                                                 |
| Queue Length 95th (m)  | 26.4                                                                              | 8.0                                                                               |                                                                                   | 6.4                                                                               | 4.8                                                                               | 0.0                                                                               |                                                                                    | 12.6                                                                                | 34.2                                                                                | 0.0                                                                                 |                                                                                     | 10.1                                                                                |
| Internal Link Dist (m) |                                                                                   | 219.4                                                                             |                                                                                   |                                                                                   | 501.1                                                                             |                                                                                   |                                                                                    |                                                                                     | 449.0                                                                               |                                                                                     |                                                                                     |                                                                                     |
| Turn Bay Length (m)    | 100.0                                                                             |                                                                                   |                                                                                   | 95.0                                                                              |                                                                                   | 60.0                                                                              |                                                                                    | 205.0                                                                               |                                                                                     | 180.0                                                                               |                                                                                     | 255.0                                                                               |
| Base Capacity (vph)    | 1149                                                                              | 1513                                                                              |                                                                                   | 450                                                                               | 912                                                                               | 597                                                                               |                                                                                    | 458                                                                                 | 1653                                                                                | 893                                                                                 |                                                                                     | 911                                                                                 |
| Starvation Cap Reductn | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Storage Cap Reductn    | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Reduced v/c Ratio      | 0.15                                                                              | 0.04                                                                              |                                                                                   | 0.06                                                                              | 0.02                                                                              | 0.03                                                                              |                                                                                    | 0.15                                                                                | 0.22                                                                                | 0.04                                                                                |                                                                                     | 0.05                                                                                |

Intersection Summary

Area Type: Other

Cycle Length: 121.3

Actuated Cycle Length: 79.2

Natural Cycle: 110

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 20.7

Intersection LOS: C

Intersection Capacity Utilization 65.0%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 2: Limebank Road & Spratt Road

|                                                                                        |                                                                                        |                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |  Ø3 |  Ø4 |
| 26.6 s                                                                                 | 36.7 s                                                                                 | 16.5 s                                                                                 | 31.5 s                                                                                   |
|  Ø5 |  Ø6 |  Ø7 |  Ø8 |
| 16.6 s                                                                                 | 46.7 s                                                                                 | 31.5 s                                                                                 | 26.5 s                                                                                   |

2: Limebank Road & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Background Traffic  
PM Peak Hour



| Lane Group             | SBT   | SBR   |
|------------------------|-------|-------|
| v/c Ratio              | 0.72  | 0.47  |
| Control Delay          | 24.1  | 4.0   |
| Queue Delay            | 0.0   | 0.0   |
| Total Delay            | 24.1  | 4.0   |
| LOS                    | C     | A     |
| Approach Delay         | 19.2  |       |
| Approach LOS           | B     |       |
| Queue Length 50th (m)  | 82.3  | 0.0   |
| Queue Length 95th (m)  | 115.2 | 17.3  |
| Internal Link Dist (m) | 611.3 |       |
| Turn Bay Length (m)    |       | 230.0 |
| Base Capacity (vph)    | 1897  | 1020  |
| Starvation Cap Reductn | 0     | 0     |
| Spillback Cap Reductn  | 0     | 0     |
| Storage Cap Reductn    | 0     | 0     |
| Reduced v/c Ratio      | 0.56  | 0.41  |
| Intersection Summary   |       |       |

3: Urbandale Plaza & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Background Traffic  
PM Peak Hour

|                         |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBT                                                                               | EBR                                                                               | WBU                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBR                                                                                 |
| Lane Configurations     | ↑↑                                                                                |                                                                                   |                                                                                   | ↑                                                                                 | ↑↑                                                                                | ↑                                                                                 | ↑                                                                                   |
| Traffic Volume (vph)    | 234                                                                               | 30                                                                                | 2                                                                                 | 37                                                                                | 437                                                                               | 58                                                                                | 3                                                                                   |
| Future Volume (vph)     | 234                                                                               | 30                                                                                | 2                                                                                 | 37                                                                                | 437                                                                               | 58                                                                                | 3                                                                                   |
| Ideal Flow (vphpl)      | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                                |
| Lane Util. Factor       | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                                |
| Ped Bike Factor         | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                     |
| Frt                     | 0.983                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                               |
| Flt Protected           |                                                                                   |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   | 0.950                                                                             |                                                                                     |
| Satd. Flow (prot)       | 3359                                                                              | 0                                                                                 | 0                                                                                 | 1729                                                                              | 3424                                                                              | 1712                                                                              | 1547                                                                                |
| Flt Permitted           |                                                                                   |                                                                                   |                                                                                   | 0.589                                                                             |                                                                                   | 0.950                                                                             |                                                                                     |
| Satd. Flow (perm)       | 3359                                                                              | 0                                                                                 | 0                                                                                 | 1067                                                                              | 3424                                                                              | 1712                                                                              | 1547                                                                                |
| Right Turn on Red       |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | Yes                                                                                 |
| Satd. Flow (RTOR)       | 26                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 3                                                                                   |
| Link Speed (k/h)        | 60                                                                                |                                                                                   |                                                                                   |                                                                                   | 60                                                                                | 50                                                                                |                                                                                     |
| Link Distance (m)       | 254.5                                                                             |                                                                                   |                                                                                   |                                                                                   | 243.4                                                                             | 128.6                                                                             |                                                                                     |
| Travel Time (s)         | 15.3                                                                              |                                                                                   |                                                                                   |                                                                                   | 14.6                                                                              | 9.3                                                                               |                                                                                     |
| Confl. Peds. (#/hr)     |                                                                                   | 3                                                                                 |                                                                                   | 3                                                                                 |                                                                                   |                                                                                   |                                                                                     |
| Peak Hour Factor        | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |
| Heavy Vehicles (%)      | 1%                                                                                | 0%                                                                                | 0%                                                                                | 0%                                                                                | 1%                                                                                | 1%                                                                                | 0%                                                                                  |
| Adj. Flow (vph)         | 234                                                                               | 30                                                                                | 2                                                                                 | 37                                                                                | 437                                                                               | 58                                                                                | 3                                                                                   |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |
| Lane Group Flow (vph)   | 264                                                                               | 0                                                                                 | 0                                                                                 | 39                                                                                | 437                                                                               | 58                                                                                | 3                                                                                   |
| Turn Type               | NA                                                                                |                                                                                   | Perm                                                                              | Perm                                                                              | NA                                                                                | Perm                                                                              | Perm                                                                                |
| Protected Phases        | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   | 6                                                                                 | 6                                                                                 |                                                                                   | 8                                                                                 | 8                                                                                   |
| Detector Phase          | 2                                                                                 |                                                                                   | 6                                                                                 | 6                                                                                 | 6                                                                                 | 8                                                                                 | 8                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |
| Minimum Initial (s)     | 10.0                                                                              |                                                                                   | 10.0                                                                              | 10.0                                                                              | 10.0                                                                              | 5.0                                                                               | 5.0                                                                                 |
| Minimum Split (s)       | 24.0                                                                              |                                                                                   | 32.0                                                                              | 32.0                                                                              | 32.0                                                                              | 32.0                                                                              | 32.0                                                                                |
| Total Split (s)         | 48.0                                                                              |                                                                                   | 48.0                                                                              | 48.0                                                                              | 48.0                                                                              | 32.0                                                                              | 32.0                                                                                |
| Total Split (%)         | 60.0%                                                                             |                                                                                   | 60.0%                                                                             | 60.0%                                                                             | 60.0%                                                                             | 40.0%                                                                             | 40.0%                                                                               |
| Maximum Green (s)       | 42.0                                                                              |                                                                                   | 42.0                                                                              | 42.0                                                                              | 42.0                                                                              | 26.0                                                                              | 26.0                                                                                |
| Yellow Time (s)         | 3.7                                                                               |                                                                                   | 3.7                                                                               | 3.7                                                                               | 3.7                                                                               | 3.3                                                                               | 3.3                                                                                 |
| All-Red Time (s)        | 2.3                                                                               |                                                                                   | 2.3                                                                               | 2.3                                                                               | 2.3                                                                               | 2.7                                                                               | 2.7                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 |
| Total Lost Time (s)     | 6.0                                                                               |                                                                                   |                                                                                   | 6.0                                                                               | 6.0                                                                               | 6.0                                                                               | 6.0                                                                                 |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 |
| Recall Mode             | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             | C-Max                                                                             | None                                                                              | None                                                                                |
| Walk Time (s)           | 7.0                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 7.0                                                                               | 7.0                                                                                 |
| Flash Dont Walk (s)     | 10.0                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 19.0                                                                              | 19.0                                                                                |
| Pedestrian Calls (#/hr) | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                   |
| Act Effect Green (s)    | 67.1                                                                              |                                                                                   |                                                                                   | 67.1                                                                              | 67.1                                                                              | 8.2                                                                               | 8.2                                                                                 |
| Actuated g/C Ratio      | 0.84                                                                              |                                                                                   |                                                                                   | 0.84                                                                              | 0.84                                                                              | 0.10                                                                              | 0.10                                                                                |
| v/c Ratio               | 0.09                                                                              |                                                                                   |                                                                                   | 0.04                                                                              | 0.15                                                                              | 0.33                                                                              | 0.02                                                                                |
| Control Delay           | 2.3                                                                               |                                                                                   |                                                                                   | 3.1                                                                               | 2.6                                                                               | 37.8                                                                              | 21.3                                                                                |
| Queue Delay             | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 |
| Total Delay             | 2.3                                                                               |                                                                                   |                                                                                   | 3.1                                                                               | 2.6                                                                               | 37.8                                                                              | 21.3                                                                                |

3: Urbandale Plaza & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Background Traffic  
PM Peak Hour

|                        | →     | ↘   | ↶   | ↙    | ←     | ↵     | ↗    |
|------------------------|-------|-----|-----|------|-------|-------|------|
| Lane Group             | EBT   | EBR | WBU | WBL  | WBT   | NBL   | NBR  |
| LOS                    | A     |     |     | A    | A     | D     | C    |
| Approach Delay         | 2.3   |     |     |      | 2.7   | 37.0  |      |
| Approach LOS           | A     |     |     |      | A     | D     |      |
| Queue Length 50th (m)  | 4.0   |     |     | 1.2  | 7.8   | 8.4   | 0.0  |
| Queue Length 95th (m)  | 8.0   |     |     | 3.9  | 13.8  | 18.4  | 2.3  |
| Internal Link Dist (m) | 230.5 |     |     |      | 219.4 | 104.6 |      |
| Turn Bay Length (m)    |       |     |     |      |       |       |      |
| Base Capacity (vph)    | 2821  |     |     | 894  | 2872  | 556   | 504  |
| Starvation Cap Reductn | 0     |     |     | 0    | 0     | 0     | 0    |
| Spillback Cap Reductn  | 0     |     |     | 0    | 0     | 0     | 0    |
| Storage Cap Reductn    | 0     |     |     | 0    | 0     | 0     | 0    |
| Reduced v/c Ratio      | 0.09  |     |     | 0.04 | 0.15  | 0.10  | 0.01 |

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.33

Intersection Signal Delay: 5.2

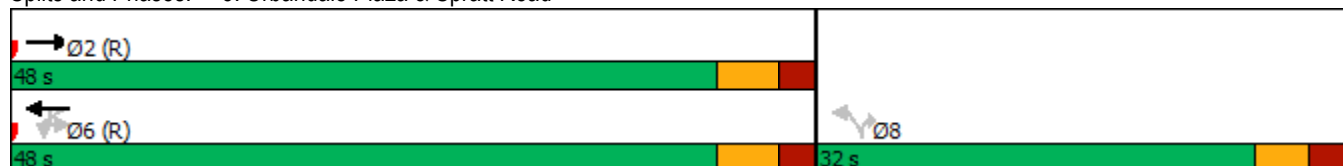
Intersection LOS: A

Intersection Capacity Utilization 41.7%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 3: Urbandale Plaza & Spratt Road



4: Limebank Road & Realigned Leitrim Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Background Traffic

PM Peak Hour

|                         |  |  |  |  |  |  |   |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |  |  |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (vph)    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 46                                                                                | 0                                                                                 | 8                                                                                 | 0                                                                                   | 642                                                                                 | 0                                                                                   | 56                                                                                  | 1672                                                                                | 0                                                                                   |
| Future Volume (vph)     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 46                                                                                | 0                                                                                 | 8                                                                                 | 0                                                                                   | 642                                                                                 | 0                                                                                   | 56                                                                                  | 1672                                                                                | 0                                                                                   |
| Ideal Flow (vphpl)      | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                |
| Storage Length (m)      | 90.0                                                                              |                                                                                   | 0.0                                                                               | 125.0                                                                             |                                                                                   | 0.0                                                                               | 90.0                                                                                |                                                                                     | 160.0                                                                               | 90.0                                                                                |                                                                                     | 0.0                                                                                 |
| Storage Lanes           | 1                                                                                 |                                                                                   | 0                                                                                 | 2                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                   |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (m)        | 7.6                                                                               |                                                                                   |                                                                                   | 2.5                                                                               |                                                                                   |                                                                                   | 7.6                                                                                 |                                                                                     |                                                                                     | 7.6                                                                                 |                                                                                     |                                                                                     |
| Lane Util. Factor       | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 0.97                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                | 0.95                                                                                |
| Frt                     |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Flt Protected           |                                                                                   |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 1625                                                                              | 3087                                                                              | 0                                                                                 | 3354                                                                              | 2939                                                                              | 0                                                                                 | 1625                                                                                | 3262                                                                                | 1820                                                                                | 1729                                                                                | 3424                                                                                | 0                                                                                   |
| Flt Permitted           |                                                                                   |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     | 0.330                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 1625                                                                              | 3087                                                                              | 0                                                                                 | 3354                                                                              | 2939                                                                              | 0                                                                                 | 1625                                                                                | 3262                                                                                | 1820                                                                                | 601                                                                                 | 3424                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   |                                                                                   |                                                                                   | 306                                                                               |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Link Speed (k/h)        |                                                                                   | 60                                                                                |                                                                                   |                                                                                   | 60                                                                                |                                                                                   |                                                                                     | 80                                                                                  |                                                                                     |                                                                                     | 80                                                                                  |                                                                                     |
| Link Distance (m)       |                                                                                   | 472.7                                                                             |                                                                                   |                                                                                   | 426.7                                                                             |                                                                                   |                                                                                     | 635.3                                                                               |                                                                                     |                                                                                     | 509.3                                                                               |                                                                                     |
| Travel Time (s)         |                                                                                   | 28.4                                                                              |                                                                                   |                                                                                   | 25.6                                                                              |                                                                                   |                                                                                     | 28.6                                                                                |                                                                                     |                                                                                     | 22.9                                                                                |                                                                                     |
| Peak Hour Factor        | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Heavy Vehicles (%)      | 12%                                                                               | 12%                                                                               | 12%                                                                               | 0%                                                                                | 12%                                                                               | 0%                                                                                | 12%                                                                                 | 6%                                                                                  | 0%                                                                                  | 0%                                                                                  | 1%                                                                                  | 12%                                                                                 |
| Adj. Flow (vph)         | 0                                                                                 | 0                                                                                 | 0                                                                                 | 46                                                                                | 0                                                                                 | 8                                                                                 | 0                                                                                   | 642                                                                                 | 0                                                                                   | 56                                                                                  | 1672                                                                                | 0                                                                                   |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 46                                                                                | 8                                                                                 | 0                                                                                 | 0                                                                                   | 642                                                                                 | 0                                                                                   | 56                                                                                  | 1672                                                                                | 0                                                                                   |
| Turn Type               | pm+pt                                                                             |                                                                                   |                                                                                   | Prot                                                                              | NA                                                                                |                                                                                   | pm+pt                                                                               | NA                                                                                  | Perm                                                                                | pm+pt                                                                               | NA                                                                                  |                                                                                     |
| Protected Phases        | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases        | 4                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 2                                                                                   |                                                                                     | 2                                                                                   | 6                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                   | 2                                                                                   | 2                                                                                   | 1                                                                                   | 6                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 10.0                                                                              |                                                                                   | 5.0                                                                               | 10.0                                                                              |                                                                                   | 5.0                                                                                 | 10.0                                                                                | 10.0                                                                                | 5.0                                                                                 | 10.0                                                                                |                                                                                     |
| Minimum Split (s)       | 12.5                                                                              | 43.6                                                                              |                                                                                   | 12.5                                                                              | 43.6                                                                              |                                                                                   | 12.4                                                                                | 39.3                                                                                | 39.3                                                                                | 12.4                                                                                | 39.3                                                                                |                                                                                     |
| Total Split (s)         | 12.5                                                                              | 43.6                                                                              |                                                                                   | 12.5                                                                              | 43.6                                                                              |                                                                                   | 12.4                                                                                | 39.3                                                                                | 39.3                                                                                | 12.4                                                                                | 39.3                                                                                |                                                                                     |
| Total Split (%)         | 11.6%                                                                             | 40.4%                                                                             |                                                                                   | 11.6%                                                                             | 40.4%                                                                             |                                                                                   | 11.5%                                                                               | 36.5%                                                                               | 36.5%                                                                               | 11.5%                                                                               | 36.5%                                                                               |                                                                                     |
| Maximum Green (s)       | 5.0                                                                               | 36.1                                                                              |                                                                                   | 5.0                                                                               | 36.1                                                                              |                                                                                   | 5.0                                                                                 | 31.9                                                                                | 31.9                                                                                | 5.0                                                                                 | 31.9                                                                                |                                                                                     |
| Yellow Time (s)         | 4.1                                                                               | 4.1                                                                               |                                                                                   | 4.1                                                                               | 4.1                                                                               |                                                                                   | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 |                                                                                     |
| All-Red Time (s)        | 3.4                                                                               | 3.4                                                                               |                                                                                   | 3.4                                                                               | 3.4                                                                               |                                                                                   | 2.4                                                                                 | 2.4                                                                                 | 2.4                                                                                 | 2.4                                                                                 | 2.4                                                                                 |                                                                                     |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     | 7.5                                                                               | 7.5                                                                               |                                                                                   | 7.5                                                                               | 7.5                                                                               |                                                                                   | 7.4                                                                                 | 7.4                                                                                 | 7.4                                                                                 | 7.4                                                                                 | 7.4                                                                                 |                                                                                     |
| Lead/Lag                | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                                | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lag                                                                                 |                                                                                     |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |                                                                                     |
| Recall Mode             | None                                                                              | None                                                                              |                                                                                   | None                                                                              | None                                                                              |                                                                                   | None                                                                                | Min                                                                                 | Min                                                                                 | None                                                                                | Min                                                                                 |                                                                                     |
| Walk Time (s)           |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                     | 7.0                                                                                 | 7.0                                                                                 |                                                                                     | 7.0                                                                                 |                                                                                     |
| Flash Dont Walk (s)     |                                                                                   | 29.1                                                                              |                                                                                   |                                                                                   | 29.1                                                                              |                                                                                   |                                                                                     | 24.9                                                                                | 24.9                                                                                |                                                                                     | 24.9                                                                                |                                                                                     |
| Pedestrian Calls (#/hr) |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |                                                                                     |
| Act Effect Green (s)    |                                                                                   |                                                                                   |                                                                                   | 6.9                                                                               | 10.1                                                                              |                                                                                   |                                                                                     | 34.3                                                                                |                                                                                     | 39.1                                                                                | 43.9                                                                                |                                                                                     |
| Actuated g/C Ratio      |                                                                                   |                                                                                   |                                                                                   | 0.13                                                                              | 0.19                                                                              |                                                                                   |                                                                                     | 0.65                                                                                |                                                                                     | 0.74                                                                                | 0.83                                                                                |                                                                                     |
| v/c Ratio               |                                                                                   |                                                                                   |                                                                                   | 0.11                                                                              | 0.01                                                                              |                                                                                   |                                                                                     | 0.30                                                                                |                                                                                     | 0.10                                                                                | 0.59                                                                                |                                                                                     |
| Control Delay           |                                                                                   |                                                                                   |                                                                                   | 20.2                                                                              | 0.0                                                                               |                                                                                   |                                                                                     | 9.9                                                                                 |                                                                                     | 4.8                                                                                 | 7.3                                                                                 |                                                                                     |
| Queue Delay             |                                                                                   |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                     | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |

4: Limebank Road & Realigned Leitrim Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Background Traffic  
PM Peak Hour

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Total Delay            |                                                                                   |                                                                                   |                                                                                   | 20.2                                                                              | 0.0                                                                               |                                                                                   |                                                                                     | 9.9                                                                                 |                                                                                     | 4.8                                                                                 | 7.3                                                                                 |                                                                                     |
| LOS                    |                                                                                   |                                                                                   |                                                                                   | C                                                                                 | A                                                                                 |                                                                                   |                                                                                     | A                                                                                   |                                                                                     | A                                                                                   | A                                                                                   |                                                                                     |
| Approach Delay         |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 17.2                                                                              |                                                                                   |                                                                                     | 9.9                                                                                 |                                                                                     |                                                                                     | 7.2                                                                                 |                                                                                     |
| Approach LOS           |                                                                                   |                                                                                   |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                     | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |
| Queue Length 50th (m)  |                                                                                   |                                                                                   |                                                                                   | 1.5                                                                               | 0.0                                                                               |                                                                                   |                                                                                     | 12.3                                                                                |                                                                                     | 0.2                                                                                 | 0.0                                                                                 |                                                                                     |
| Queue Length 95th (m)  |                                                                                   |                                                                                   |                                                                                   | 5.7                                                                               | 0.0                                                                               |                                                                                   |                                                                                     | 41.4                                                                                |                                                                                     | 6.0                                                                                 | #101.2                                                                              |                                                                                     |
| Internal Link Dist (m) |                                                                                   | 448.7                                                                             |                                                                                   |                                                                                   | 402.7                                                                             |                                                                                   |                                                                                     | 611.3                                                                               |                                                                                     |                                                                                     | 485.3                                                                               |                                                                                     |
| Turn Bay Length (m)    |                                                                                   |                                                                                   |                                                                                   | 125.0                                                                             |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     | 90.0                                                                                |                                                                                     |                                                                                     |
| Base Capacity (vph)    |                                                                                   |                                                                                   |                                                                                   | 436                                                                               | 2121                                                                              |                                                                                   |                                                                                     | 2526                                                                                |                                                                                     | 550                                                                                 | 2831                                                                                |                                                                                     |
| Starvation Cap Reductn |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                     | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn  |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                     | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn    |                                                                                   |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                     | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio      |                                                                                   |                                                                                   |                                                                                   | 0.11                                                                              | 0.00                                                                              |                                                                                   |                                                                                     | 0.25                                                                                |                                                                                     | 0.10                                                                                | 0.59                                                                                |                                                                                     |

Intersection Summary

Area Type: Other

Cycle Length: 107.8

Actuated Cycle Length: 53.1

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 8.2

Intersection LOS: A

Intersection Capacity Utilization 69.9%

ICU Level of Service C

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 4: Limebank Road & Realigned Leitrim Road

|                                                                                     |                                                                                     |                                                                                     |                                                                                      |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|  |  |  |  |
| Ø1                                                                                  | Ø2                                                                                  | Ø3                                                                                  | Ø4                                                                                   |
| 12.4 s                                                                              | 39.3 s                                                                              | 12.5 s                                                                              | 43.6 s                                                                               |
|  |  |  |  |
| Ø5                                                                                  | Ø6                                                                                  | Ø7                                                                                  | Ø8                                                                                   |
| 12.4 s                                                                              | 39.3 s                                                                              | 12.5 s                                                                              | 43.6 s                                                                               |

Future (2031) Total Traffic

1: Limebank Road & Leitrim Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
AM Peak Hour

|                         |  |  |  |  |  |  |   |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)    | 3                                                                                 | 240                                                                               | 28                                                                                | 348                                                                               | 124                                                                               | 203                                                                               | 6                                                                                   | 1317                                                                                | 619                                                                                 | 199                                                                                 | 600                                                                                 | 7                                                                                   |
| Future Volume (vph)     | 3                                                                                 | 240                                                                               | 28                                                                                | 348                                                                               | 124                                                                               | 203                                                                               | 6                                                                                   | 1317                                                                                | 619                                                                                 | 199                                                                                 | 600                                                                                 | 7                                                                                   |
| Ideal Flow (vphpl)      | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                |
| Storage Length (m)      | 130.0                                                                             |                                                                                   | 130.0                                                                             | 120.0                                                                             |                                                                                   | 150.0                                                                             | 195.0                                                                               |                                                                                     | 180.0                                                                               | 210.0                                                                               |                                                                                     | 185.0                                                                               |
| Storage Lanes           | 2                                                                                 |                                                                                   | 1                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 2                                                                                   |                                                                                     | 1                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (m)        | 7.6                                                                               |                                                                                   |                                                                                   | 7.6                                                                               |                                                                                   |                                                                                   | 7.6                                                                                 |                                                                                     |                                                                                     | 7.6                                                                                 |                                                                                     |                                                                                     |
| Lane Util. Factor       | 0.97                                                                              | 1.00                                                                              | 1.00                                                                              | 0.97                                                                              | 1.00                                                                              | 1.00                                                                              | 0.97                                                                                | 0.95                                                                                | 1.00                                                                                | 0.97                                                                                | 0.95                                                                                | 1.00                                                                                |
| Ped Bike Factor         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     | 0.99                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |
| Frt                     |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 3354                                                                              | 1820                                                                              | 1031                                                                              | 2942                                                                              | 1733                                                                              | 1488                                                                              | 3354                                                                                | 3357                                                                                | 1419                                                                                | 3077                                                                                | 3357                                                                                | 1547                                                                                |
| Flt Permitted           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 3354                                                                              | 1820                                                                              | 1031                                                                              | 2942                                                                              | 1733                                                                              | 1488                                                                              | 3354                                                                                | 3357                                                                                | 1400                                                                                | 3076                                                                                | 3357                                                                                | 1547                                                                                |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   |                                                                                   | 188                                                                               |                                                                                   |                                                                                   | 190                                                                               |                                                                                     |                                                                                     | 416                                                                                 |                                                                                     |                                                                                     | 190                                                                                 |
| Link Speed (k/h)        |                                                                                   | 80                                                                                |                                                                                   |                                                                                   | 80                                                                                |                                                                                   |                                                                                     | 80                                                                                  |                                                                                     |                                                                                     | 80                                                                                  |                                                                                     |
| Link Distance (m)       |                                                                                   | 395.5                                                                             |                                                                                   |                                                                                   | 472.5                                                                             |                                                                                   |                                                                                     | 509.3                                                                               |                                                                                     |                                                                                     | 517.2                                                                               |                                                                                     |
| Travel Time (s)         |                                                                                   | 17.8                                                                              |                                                                                   |                                                                                   | 21.3                                                                              |                                                                                   |                                                                                     | 22.9                                                                                |                                                                                     |                                                                                     | 23.3                                                                                |                                                                                     |
| Confl. Peds. (#/hr)     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     |                                                                                     |
| Peak Hour Factor        | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Heavy Vehicles (%)      | 0%                                                                                | 0%                                                                                | 50%                                                                               | 14%                                                                               | 5%                                                                                | 4%                                                                                | 0%                                                                                  | 3%                                                                                  | 9%                                                                                  | 9%                                                                                  | 3%                                                                                  | 0%                                                                                  |
| Adj. Flow (vph)         | 3                                                                                 | 240                                                                               | 28                                                                                | 348                                                                               | 124                                                                               | 203                                                                               | 6                                                                                   | 1317                                                                                | 619                                                                                 | 199                                                                                 | 600                                                                                 | 7                                                                                   |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 3                                                                                 | 240                                                                               | 28                                                                                | 348                                                                               | 124                                                                               | 203                                                                               | 6                                                                                   | 1317                                                                                | 619                                                                                 | 199                                                                                 | 600                                                                                 | 7                                                                                   |
| Turn Type               | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                                | NA                                                                                  | Perm                                                                                | Prot                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases        | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                     |                                                                                     | 2                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |
| Detector Phase          | 7                                                                                 | 4                                                                                 | 4                                                                                 | 3                                                                                 | 8                                                                                 | 8                                                                                 | 5                                                                                   | 2                                                                                   | 2                                                                                   | 1                                                                                   | 6                                                                                   | 6                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 10.0                                                                              | 10.0                                                                              | 5.0                                                                               | 10.0                                                                              | 10.0                                                                              | 5.0                                                                                 | 21.0                                                                                | 21.0                                                                                | 5.0                                                                                 | 21.0                                                                                | 21.0                                                                                |
| Minimum Split (s)       | 11.1                                                                              | 30.8                                                                              | 30.8                                                                              | 11.1                                                                              | 30.8                                                                              | 30.8                                                                              | 11.6                                                                                | 27.6                                                                                | 27.6                                                                                | 11.6                                                                                | 27.6                                                                                | 27.6                                                                                |
| Total Split (s)         | 12.0                                                                              | 31.0                                                                              | 31.0                                                                              | 23.0                                                                              | 42.0                                                                              | 42.0                                                                              | 12.0                                                                                | 60.0                                                                                | 60.0                                                                                | 16.0                                                                                | 64.0                                                                                | 64.0                                                                                |
| Total Split (%)         | 9.2%                                                                              | 23.8%                                                                             | 23.8%                                                                             | 17.7%                                                                             | 32.3%                                                                             | 32.3%                                                                             | 9.2%                                                                                | 46.2%                                                                               | 46.2%                                                                               | 12.3%                                                                               | 49.2%                                                                               | 49.2%                                                                               |
| Maximum Green (s)       | 5.9                                                                               | 24.2                                                                              | 24.2                                                                              | 16.9                                                                              | 35.2                                                                              | 35.2                                                                              | 5.4                                                                                 | 53.4                                                                                | 53.4                                                                                | 9.4                                                                                 | 57.4                                                                                | 57.4                                                                                |
| Yellow Time (s)         | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 |
| All-Red Time (s)        | 1.9                                                                               | 2.6                                                                               | 2.6                                                                               | 1.9                                                                               | 2.6                                                                               | 2.6                                                                               | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     | 6.1                                                                               | 6.8                                                                               | 6.8                                                                               | 6.1                                                                               | 6.8                                                                               | 6.8                                                                               | 6.6                                                                                 | 6.6                                                                                 | 6.6                                                                                 | 6.6                                                                                 | 6.6                                                                                 | 6.6                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                                | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                                | Min                                                                                 | Min                                                                                 | None                                                                                | Min                                                                                 | Min                                                                                 |
| Walk Time (s)           |                                                                                   | 7.0                                                                               | 7.0                                                                               |                                                                                   | 7.0                                                                               | 7.0                                                                               |                                                                                     | 7.0                                                                                 | 7.0                                                                                 |                                                                                     | 7.0                                                                                 | 7.0                                                                                 |
| Flash Dont Walk (s)     |                                                                                   | 17.0                                                                              | 17.0                                                                              |                                                                                   | 17.0                                                                              | 17.0                                                                              |                                                                                     | 14.0                                                                                | 14.0                                                                                |                                                                                     | 14.0                                                                                | 14.0                                                                                |
| Pedestrian Calls (#/hr) |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Act Effect Green (s)    | 5.7                                                                               | 20.5                                                                              | 20.5                                                                              | 16.7                                                                              | 41.1                                                                              | 41.1                                                                              | 5.4                                                                                 | 52.9                                                                                | 52.9                                                                                | 9.4                                                                                 | 66.6                                                                                | 66.6                                                                                |
| Actuated g/C Ratio      | 0.05                                                                              | 0.16                                                                              | 0.16                                                                              | 0.13                                                                              | 0.33                                                                              | 0.33                                                                              | 0.04                                                                                | 0.42                                                                                | 0.42                                                                                | 0.07                                                                                | 0.53                                                                                | 0.53                                                                                |
| v/c Ratio               | 0.02                                                                              | 0.81                                                                              | 0.09                                                                              | 0.89                                                                              | 0.22                                                                              | 0.33                                                                              | 0.04                                                                                | 0.93                                                                                | 0.75                                                                                | 0.87                                                                                | 0.34                                                                                | 0.01                                                                                |

1: Limebank Road & Leitrim Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
AM Peak Hour

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Control Delay          | 59.7                                                                              | 71.7                                                                              | 0.5                                                                               | 79.1                                                                              | 33.0                                                                              | 7.3                                                                               | 60.3                                                                               | 48.1                                                                                | 16.1                                                                                | 90.8                                                                                | 18.7                                                                                | 0.0                                                                                 |
| Queue Delay            | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay            | 59.7                                                                              | 71.7                                                                              | 0.5                                                                               | 79.1                                                                              | 33.0                                                                              | 7.3                                                                               | 60.3                                                                               | 48.1                                                                                | 16.1                                                                                | 90.8                                                                                | 18.7                                                                                | 0.0                                                                                 |
| LOS                    | E                                                                                 | E                                                                                 | A                                                                                 | E                                                                                 | C                                                                                 | A                                                                                 | E                                                                                  | D                                                                                   | B                                                                                   | F                                                                                   | B                                                                                   | A                                                                                   |
| Approach Delay         | 64.2                                                                              |                                                                                   |                                                                                   | 49.0                                                                              |                                                                                   |                                                                                   | 37.9                                                                               |                                                                                     |                                                                                     | 36.4                                                                                |                                                                                     |                                                                                     |
| Approach LOS           | E                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | D                                                                                  |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |
| Queue Length 50th (m)  | 0.4                                                                               | 58.2                                                                              | 0.0                                                                               | 45.0                                                                              | 21.7                                                                              | 2.1                                                                               | 0.7                                                                                | 164.8                                                                               | 43.2                                                                                | 26.0                                                                                | 42.5                                                                                | 0.0                                                                                 |
| Queue Length 95th (m)  | 2.0                                                                               | 87.2                                                                              | 0.0                                                                               | #73.1                                                                             | 41.9                                                                              | 21.1                                                                              | 3.1                                                                                | #218.0                                                                              | 96.4                                                                                | #48.7                                                                               | 69.1                                                                                | 0.0                                                                                 |
| Internal Link Dist (m) | 371.5                                                                             |                                                                                   |                                                                                   | 448.5                                                                             |                                                                                   |                                                                                   | 485.3                                                                              |                                                                                     |                                                                                     | 493.2                                                                               |                                                                                     |                                                                                     |
| Turn Bay Length (m)    | 130.0                                                                             |                                                                                   | 130.0                                                                             | 120.0                                                                             |                                                                                   | 150.0                                                                             | 195.0                                                                              |                                                                                     | 180.0                                                                               | 210.0                                                                               |                                                                                     | 185.0                                                                               |
| Base Capacity (vph)    | 157                                                                               | 350                                                                               | 350                                                                               | 396                                                                               | 566                                                                               | 614                                                                               | 144                                                                                | 1428                                                                                | 835                                                                                 | 230                                                                                 | 1778                                                                                | 908                                                                                 |
| Starvation Cap Reductn | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio      | 0.02                                                                              | 0.69                                                                              | 0.08                                                                              | 0.88                                                                              | 0.22                                                                              | 0.33                                                                              | 0.04                                                                               | 0.92                                                                                | 0.74                                                                                | 0.87                                                                                | 0.34                                                                                | 0.01                                                                                |

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 125.7

Natural Cycle: 115

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 41.5

Intersection LOS: D

Intersection Capacity Utilization 92.1%

ICU Level of Service F

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Limebank Road & Leitrim Road

|                                                                                     |                                                                                     |                                                                                     |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |  |
| Ø1                                                                                  | Ø2                                                                                  | Ø3                                                                                  | Ø4                                                                                    |
| 16 s                                                                                | 60 s                                                                                | 23 s                                                                                | 31 s                                                                                  |
|  |  |  |  |
| Ø5                                                                                  | Ø6                                                                                  | Ø7                                                                                  | Ø8                                                                                    |
| 12 s                                                                                | 64 s                                                                                | 12 s                                                                                | 42 s                                                                                  |

2: Limebank Road & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
AM Peak Hour

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBU                                                                                | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 |
| Lane Configurations     |  |  |                                                                                   |  |  |  |                                                                                    |  |  |  |  |  |
| Traffic Volume (vph)    | 542                                                                               | 171                                                                               | 33                                                                                | 108                                                                               | 98                                                                                | 192                                                                               | 21                                                                                 | 32                                                                                  | 1100                                                                                | 159                                                                                 | 94                                                                                  | 315                                                                                 |
| Future Volume (vph)     | 542                                                                               | 171                                                                               | 33                                                                                | 108                                                                               | 98                                                                                | 192                                                                               | 21                                                                                 | 32                                                                                  | 1100                                                                                | 159                                                                                 | 94                                                                                  | 315                                                                                 |
| Ideal Flow (vphpl)      | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                               | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                |
| Storage Length (m)      | 100.0                                                                             |                                                                                   | 0.0                                                                               | 95.0                                                                              |                                                                                   | 60.0                                                                              |                                                                                    | 205.0                                                                               |                                                                                     | 180.0                                                                               | 255.0                                                                               |                                                                                     |
| Storage Lanes           | 2                                                                                 |                                                                                   | 0                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 |                                                                                    | 2                                                                                   |                                                                                     | 1                                                                                   | 2                                                                                   |                                                                                     |
| Taper Length (m)        | 7.6                                                                               |                                                                                   |                                                                                   | 7.6                                                                               |                                                                                   |                                                                                   |                                                                                    | 7.6                                                                                 |                                                                                     |                                                                                     | 7.6                                                                                 |                                                                                     |
| Lane Util. Factor       | 0.97                                                                              | 0.95                                                                              | 0.95                                                                              | 0.97                                                                              | 0.95                                                                              | 1.00                                                                              | 0.95                                                                               | 0.97                                                                                | 0.95                                                                                | 1.00                                                                                | 0.97                                                                                | 0.95                                                                                |
| Ped Bike Factor         | 0.87                                                                              | 1.00                                                                              |                                                                                   | 0.98                                                                              |                                                                                   | 0.90                                                                              |                                                                                    | 0.99                                                                                |                                                                                     | 0.96                                                                                | 0.99                                                                                |                                                                                     |
| Frt                     |                                                                                   | 0.976                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                    |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     |
| Flt Protected           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                    | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |
| Satd. Flow (prot)       | 3321                                                                              | 3287                                                                              | 0                                                                                 | 3022                                                                              | 3357                                                                              | 1419                                                                              | 0                                                                                  | 3256                                                                                | 3390                                                                                | 1419                                                                                | 2968                                                                                | 3144                                                                                |
| Flt Permitted           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                    | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |
| Satd. Flow (perm)       | 2888                                                                              | 3287                                                                              | 0                                                                                 | 2949                                                                              | 3357                                                                              | 1278                                                                              | 0                                                                                  | 3222                                                                                | 3390                                                                                | 1357                                                                                | 2934                                                                                | 3144                                                                                |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Satd. Flow (RTOR)       |                                                                                   | 13                                                                                |                                                                                   |                                                                                   |                                                                                   | 190                                                                               |                                                                                    |                                                                                     |                                                                                     | 189                                                                                 |                                                                                     |                                                                                     |
| Link Speed (k/h)        |                                                                                   | 60                                                                                |                                                                                   |                                                                                   | 60                                                                                |                                                                                   |                                                                                    |                                                                                     | 80                                                                                  |                                                                                     |                                                                                     | 80                                                                                  |
| Link Distance (m)       |                                                                                   | 243.4                                                                             |                                                                                   |                                                                                   | 525.1                                                                             |                                                                                   |                                                                                    |                                                                                     | 473.0                                                                               |                                                                                     |                                                                                     | 635.3                                                                               |
| Travel Time (s)         |                                                                                   | 14.6                                                                              |                                                                                   |                                                                                   | 31.5                                                                              |                                                                                   |                                                                                    |                                                                                     | 21.3                                                                                |                                                                                     |                                                                                     | 28.6                                                                                |
| Confl. Peds. (#/hr)     | 61                                                                                |                                                                                   | 13                                                                                | 13                                                                                |                                                                                   | 61                                                                                |                                                                                    | 11                                                                                  |                                                                                     | 22                                                                                  | 22                                                                                  |                                                                                     |
| Peak Hour Factor        | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Heavy Vehicles (%)      | 1%                                                                                | 2%                                                                                | 3%                                                                                | 11%                                                                               | 3%                                                                                | 9%                                                                                | 0%                                                                                 | 5%                                                                                  | 2%                                                                                  | 9%                                                                                  | 13%                                                                                 | 10%                                                                                 |
| Adj. Flow (vph)         | 542                                                                               | 171                                                                               | 33                                                                                | 108                                                                               | 98                                                                                | 192                                                                               | 21                                                                                 | 32                                                                                  | 1100                                                                                | 159                                                                                 | 94                                                                                  | 315                                                                                 |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 542                                                                               | 204                                                                               | 0                                                                                 | 108                                                                               | 98                                                                                | 192                                                                               | 0                                                                                  | 53                                                                                  | 1100                                                                                | 159                                                                                 | 94                                                                                  | 315                                                                                 |
| Turn Type               | Prot                                                                              | NA                                                                                |                                                                                   | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                               | Prot                                                                                | NA                                                                                  | Perm                                                                                | Prot                                                                                | NA                                                                                  |
| Protected Phases        | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                  | 5                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   | 6                                                                                   |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 8                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 | 8                                                                                 | 5                                                                                  | 5                                                                                   | 2                                                                                   | 2                                                                                   | 1                                                                                   | 6                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 10.0                                                                              |                                                                                   | 5.0                                                                               | 10.0                                                                              | 10.0                                                                              | 5.0                                                                                | 5.0                                                                                 | 15.0                                                                                | 15.0                                                                                | 5.0                                                                                 | 15.0                                                                                |
| Minimum Split (s)       | 11.5                                                                              | 41.5                                                                              |                                                                                   | 11.5                                                                              | 41.5                                                                              | 41.5                                                                              | 11.6                                                                               | 11.6                                                                                | 41.7                                                                                | 41.7                                                                                | 11.6                                                                                | 41.7                                                                                |
| Total Split (s)         | 56.5                                                                              | 26.5                                                                              |                                                                                   | 31.5                                                                              | 26.5                                                                              | 26.5                                                                              | 16.6                                                                               | 16.6                                                                                | 61.7                                                                                | 61.7                                                                                | 26.6                                                                                | 31.7                                                                                |
| Total Split (%)         | 33.0%                                                                             | 15.5%                                                                             |                                                                                   | 18.4%                                                                             | 15.5%                                                                             | 15.5%                                                                             | 9.7%                                                                               | 9.7%                                                                                | 36.0%                                                                               | 36.0%                                                                               | 15.5%                                                                               | 18.5%                                                                               |
| Maximum Green (s)       | 50.0                                                                              | 20.0                                                                              |                                                                                   | 25.0                                                                              | 20.0                                                                              | 20.0                                                                              | 10.0                                                                               | 10.0                                                                                | 55.0                                                                                | 55.0                                                                                | 20.0                                                                                | 25.0                                                                                |
| Yellow Time (s)         | 3.7                                                                               | 3.7                                                                               |                                                                                   | 3.7                                                                               | 3.7                                                                               | 3.7                                                                               | 4.6                                                                                | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 |
| All-Red Time (s)        | 2.8                                                                               | 2.8                                                                               |                                                                                   | 2.8                                                                               | 2.8                                                                               | 2.8                                                                               | 2.0                                                                                | 2.0                                                                                 | 2.1                                                                                 | 2.1                                                                                 | 2.0                                                                                 | 2.1                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     | 6.5                                                                               | 6.5                                                                               |                                                                                   | 6.5                                                                               | 6.5                                                                               | 6.5                                                                               |                                                                                    | 6.6                                                                                 | 6.7                                                                                 | 6.7                                                                                 | 6.6                                                                                 | 6.7                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                               | Lead                                                                                | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | Min                                                                               | None                                                                              |                                                                                   | None                                                                              | None                                                                              | None                                                                              | None                                                                               | None                                                                                | Min                                                                                 | Min                                                                                 | None                                                                                | Min                                                                                 |
| Walk Time (s)           |                                                                                   | 10.0                                                                              |                                                                                   |                                                                                   | 10.0                                                                              | 10.0                                                                              |                                                                                    |                                                                                     | 10.0                                                                                | 10.0                                                                                |                                                                                     | 10.0                                                                                |
| Flash Dont Walk (s)     |                                                                                   | 25.0                                                                              |                                                                                   |                                                                                   | 25.0                                                                              | 25.0                                                                              |                                                                                    |                                                                                     | 25.0                                                                                | 25.0                                                                                |                                                                                     | 25.0                                                                                |
| Pedestrian Calls (#/hr) |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Act Effect Green (s)    | 26.2                                                                              | 27.4                                                                              |                                                                                   | 10.1                                                                              | 11.3                                                                              | 11.3                                                                              |                                                                                    | 7.6                                                                                 | 53.1                                                                                | 53.1                                                                                | 9.6                                                                                 | 57.8                                                                                |
| Actuated g/C Ratio      | 0.21                                                                              | 0.22                                                                              |                                                                                   | 0.08                                                                              | 0.09                                                                              | 0.09                                                                              |                                                                                    | 0.06                                                                                | 0.42                                                                                | 0.42                                                                                | 0.08                                                                                | 0.46                                                                                |
| v/c Ratio               | 0.79                                                                              | 0.28                                                                              |                                                                                   | 0.45                                                                              | 0.33                                                                              | 0.67                                                                              |                                                                                    | 0.27                                                                                | 0.78                                                                                | 0.23                                                                                | 0.42                                                                                | 0.22                                                                                |

2: Limebank Road & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
AM Peak Hour

|                         |       |
|-------------------------|-------|
| Lane Group              | SBR   |
| Lane Configurations     |       |
| Traffic Volume (vph)    | 107   |
| Future Volume (vph)     | 107   |
| Ideal Flow (vphpl)      | 1800  |
| Storage Length (m)      | 230.0 |
| Storage Lanes           | 1     |
| Taper Length (m)        |       |
| Lane Util. Factor       | 1.00  |
| Ped Bike Factor         | 0.97  |
| Frt                     | 0.850 |
| Flt Protected           |       |
| Satd. Flow (prot)       | 1502  |
| Flt Permitted           |       |
| Satd. Flow (perm)       | 1460  |
| Right Turn on Red       | Yes   |
| Satd. Flow (RTOR)       | 147   |
| Link Speed (k/h)        |       |
| Link Distance (m)       |       |
| Travel Time (s)         |       |
| Confl. Peds. (#/hr)     | 11    |
| Peak Hour Factor        | 1.00  |
| Heavy Vehicles (%)      | 3%    |
| Adj. Flow (vph)         | 107   |
| Shared Lane Traffic (%) |       |
| Lane Group Flow (vph)   | 107   |
| Turn Type               | Perm  |
| Protected Phases        |       |
| Permitted Phases        | 6     |
| Detector Phase          | 6     |
| Switch Phase            |       |
| Minimum Initial (s)     | 15.0  |
| Minimum Split (s)       | 41.7  |
| Total Split (s)         | 31.7  |
| Total Split (%)         | 18.5% |
| Maximum Green (s)       | 25.0  |
| Yellow Time (s)         | 4.6   |
| All-Red Time (s)        | 2.1   |
| Lost Time Adjust (s)    | 0.0   |
| Total Lost Time (s)     | 6.7   |
| Lead/Lag                | Lag   |
| Lead-Lag Optimize?      | Yes   |
| Vehicle Extension (s)   | 3.0   |
| Recall Mode             | Min   |
| Walk Time (s)           | 10.0  |
| Flash Dont Walk (s)     | 25.0  |
| Pedestrian Calls (#/hr) | 0     |
| Act Effct Green (s)     | 57.8  |
| Actuated g/C Ratio      | 0.46  |
| v/c Ratio               | 0.14  |

2: Limebank Road & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
AM Peak Hour

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBU                                                                                | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 |
| Control Delay          | 57.0                                                                              | 40.3                                                                              |                                                                                   | 63.6                                                                              | 59.3                                                                              | 20.3                                                                              |                                                                                    | 63.6                                                                                | 37.5                                                                                | 2.8                                                                                 | 63.9                                                                                | 23.4                                                                                |
| Queue Delay            | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay            | 57.0                                                                              | 40.3                                                                              |                                                                                   | 63.6                                                                              | 59.3                                                                              | 20.3                                                                              |                                                                                    | 63.6                                                                                | 37.5                                                                                | 2.8                                                                                 | 63.9                                                                                | 23.4                                                                                |
| LOS                    | E                                                                                 | D                                                                                 |                                                                                   | E                                                                                 | E                                                                                 | C                                                                                 |                                                                                    | E                                                                                   | D                                                                                   | A                                                                                   | E                                                                                   | C                                                                                   |
| Approach Delay         |                                                                                   | 52.4                                                                              |                                                                                   |                                                                                   | 41.7                                                                              |                                                                                   |                                                                                    |                                                                                     | 34.3                                                                                |                                                                                     |                                                                                     | 26.3                                                                                |
| Approach LOS           |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |
| Queue Length 50th (m)  | 66.0                                                                              | 21.1                                                                              |                                                                                   | 13.3                                                                              | 12.2                                                                              | 0.5                                                                               |                                                                                    | 6.5                                                                                 | 118.7                                                                               | 0.0                                                                                 | 11.5                                                                                | 24.7                                                                                |
| Queue Length 95th (m)  | 93.7                                                                              | 34.1                                                                              |                                                                                   | 25.3                                                                              | 23.2                                                                              | 25.2                                                                              |                                                                                    | 14.7                                                                                | 183.2                                                                               | 8.7                                                                                 | 22.7                                                                                | 43.4                                                                                |
| Internal Link Dist (m) |                                                                                   | 219.4                                                                             |                                                                                   |                                                                                   | 501.1                                                                             |                                                                                   |                                                                                    |                                                                                     | 449.0                                                                               |                                                                                     |                                                                                     | 611.3                                                                               |
| Turn Bay Length (m)    | 100.0                                                                             |                                                                                   |                                                                                   | 95.0                                                                              |                                                                                   | 60.0                                                                              |                                                                                    | 205.0                                                                               |                                                                                     | 180.0                                                                               | 255.0                                                                               |                                                                                     |
| Base Capacity (vph)    | 1321                                                                              | 1185                                                                              |                                                                                   | 601                                                                               | 534                                                                               | 363                                                                               |                                                                                    | 259                                                                                 | 1484                                                                                | 700                                                                                 | 472                                                                                 | 1626                                                                                |
| Starvation Cap Reductn | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn    | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio      | 0.41                                                                              | 0.17                                                                              |                                                                                   | 0.18                                                                              | 0.18                                                                              | 0.53                                                                              |                                                                                    | 0.20                                                                                | 0.74                                                                                | 0.23                                                                                | 0.20                                                                                | 0.19                                                                                |

Intersection Summary

Area Type: Other

Cycle Length: 171.3

Actuated Cycle Length: 126.7

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 38.5

Intersection LOS: D

Intersection Capacity Utilization 102.1%

ICU Level of Service G

Analysis Period (min) 15

Splits and Phases: 2: Limebank Road & Spratt Road

|                                                                                     |                                                                                     |                                                                                     |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |  |
| Ø1                                                                                  | Ø2                                                                                  | Ø3                                                                                  | Ø4                                                                                    |
| 26.6 s                                                                              | 61.7 s                                                                              | 31.5 s                                                                              | 26.5 s                                                                                |
|  |  |  |  |
| Ø5                                                                                  | Ø6                                                                                  | Ø7                                                                                  | Ø8                                                                                    |
| 16.6 s                                                                              | 31.7 s                                                                              | 56.5 s                                                                              | 26.5 s                                                                                |

2: Limebank Road & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
AM Peak Hour



|                        |       |
|------------------------|-------|
| Lane Group             | SBR   |
| Control Delay          | 1.7   |
| Queue Delay            | 0.0   |
| Total Delay            | 1.7   |
| LOS                    | A     |
| Approach Delay         |       |
| Approach LOS           |       |
| Queue Length 50th (m)  | 0.0   |
| Queue Length 95th (m)  | 4.4   |
| Internal Link Dist (m) |       |
| Turn Bay Length (m)    | 230.0 |
| Base Capacity (vph)    | 826   |
| Starvation Cap Reductn | 0     |
| Spillback Cap Reductn  | 0     |
| Storage Cap Reductn    | 0     |
| Reduced v/c Ratio      | 0.13  |
| Intersection Summary   |       |

3: Urbandale Plaza & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
AM Peak Hour

|                         |  |  |  |  |  |  |   |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (vph)    | 1                                                                                 | 737                                                                               | 17                                                                                | 21                                                                                | 215                                                                               | 2                                                                                 | 12                                                                                  | 0                                                                                   | 3                                                                                   | 6                                                                                   | 0                                                                                   | 2                                                                                   |
| Future Volume (vph)     | 1                                                                                 | 737                                                                               | 17                                                                                | 21                                                                                | 215                                                                               | 2                                                                                 | 12                                                                                  | 0                                                                                   | 3                                                                                   | 6                                                                                   | 0                                                                                   | 2                                                                                   |
| Ideal Flow (vphpl)      | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                |
| Lane Util. Factor       | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped Bike Factor         |                                                                                   | 1.00                                                                              |                                                                                   | 0.99                                                                              |                                                                                   |                                                                                   | 1.00                                                                                | 0.98                                                                                |                                                                                     |                                                                                     | 0.99                                                                                |                                                                                     |
| Frt                     |                                                                                   | 0.997                                                                             |                                                                                   |                                                                                   | 0.999                                                                             |                                                                                   |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.966                                                                               |                                                                                     |
| Flt Protected           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.964                                                                               |                                                                                     |
| Satd. Flow (prot)       | 1729                                                                              | 3410                                                                              | 0                                                                                 | 1662                                                                              | 3261                                                                              | 0                                                                                 | 1530                                                                                | 1523                                                                                | 0                                                                                   | 0                                                                                   | 1689                                                                                | 0                                                                                   |
| Flt Permitted           | 0.616                                                                             |                                                                                   |                                                                                   | 0.366                                                                             |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 1121                                                                              | 3410                                                                              | 0                                                                                 | 635                                                                               | 3261                                                                              | 0                                                                                 | 1609                                                                                | 1523                                                                                | 0                                                                                   | 0                                                                                   | 1748                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                     | 161                                                                                 |                                                                                     |                                                                                     | 41                                                                                  |                                                                                     |
| Link Speed (k/h)        |                                                                                   | 60                                                                                |                                                                                   |                                                                                   | 60                                                                                |                                                                                   |                                                                                     | 50                                                                                  |                                                                                     |                                                                                     | 50                                                                                  |                                                                                     |
| Link Distance (m)       |                                                                                   | 254.5                                                                             |                                                                                   |                                                                                   | 243.4                                                                             |                                                                                   |                                                                                     | 128.6                                                                               |                                                                                     |                                                                                     | 121.2                                                                               |                                                                                     |
| Travel Time (s)         |                                                                                   | 15.3                                                                              |                                                                                   |                                                                                   | 14.6                                                                              |                                                                                   |                                                                                     | 9.3                                                                                 |                                                                                     |                                                                                     | 8.7                                                                                 |                                                                                     |
| Confl. Peds. (#/hr)     |                                                                                   |                                                                                   | 13                                                                                | 13                                                                                |                                                                                   |                                                                                   | 1                                                                                   |                                                                                     | 4                                                                                   | 4                                                                                   |                                                                                     | 1                                                                                   |
| Peak Hour Factor        | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Heavy Vehicles (%)      | 0%                                                                                | 1%                                                                                | 0%                                                                                | 4%                                                                                | 6%                                                                                | 0%                                                                                | 13%                                                                                 | 0%                                                                                  | 0%                                                                                  | 0%                                                                                  | 0%                                                                                  | 0%                                                                                  |
| Adj. Flow (vph)         | 1                                                                                 | 737                                                                               | 17                                                                                | 21                                                                                | 215                                                                               | 2                                                                                 | 12                                                                                  | 0                                                                                   | 3                                                                                   | 6                                                                                   | 0                                                                                   | 2                                                                                   |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 1                                                                                 | 754                                                                               | 0                                                                                 | 21                                                                                | 217                                                                               | 0                                                                                 | 12                                                                                  | 3                                                                                   | 0                                                                                   | 0                                                                                   | 8                                                                                   | 0                                                                                   |
| Turn Type               | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                                | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |                                                                                     |
| Permitted Phases        | 2                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 8                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 2                                                                                 | 2                                                                                 |                                                                                   | 6                                                                                 | 6                                                                                 |                                                                                   | 8                                                                                   | 8                                                                                   |                                                                                     | 4                                                                                   | 4                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 10.0                                                                              | 10.0                                                                              |                                                                                   | 10.0                                                                              | 10.0                                                                              |                                                                                   | 5.0                                                                                 | 5.0                                                                                 |                                                                                     | 5.0                                                                                 | 5.0                                                                                 |                                                                                     |
| Minimum Split (s)       | 24.0                                                                              | 24.0                                                                              |                                                                                   | 24.0                                                                              | 24.0                                                                              |                                                                                   | 32.0                                                                                | 32.0                                                                                |                                                                                     | 32.0                                                                                | 32.0                                                                                |                                                                                     |
| Total Split (s)         | 48.0                                                                              | 48.0                                                                              |                                                                                   | 48.0                                                                              | 48.0                                                                              |                                                                                   | 32.0                                                                                | 32.0                                                                                |                                                                                     | 32.0                                                                                | 32.0                                                                                |                                                                                     |
| Total Split (%)         | 60.0%                                                                             | 60.0%                                                                             |                                                                                   | 60.0%                                                                             | 60.0%                                                                             |                                                                                   | 40.0%                                                                               | 40.0%                                                                               |                                                                                     | 40.0%                                                                               | 40.0%                                                                               |                                                                                     |
| Maximum Green (s)       | 42.0                                                                              | 42.0                                                                              |                                                                                   | 42.0                                                                              | 42.0                                                                              |                                                                                   | 26.0                                                                                | 26.0                                                                                |                                                                                     | 26.0                                                                                | 26.0                                                                                |                                                                                     |
| Yellow Time (s)         | 3.7                                                                               | 3.7                                                                               |                                                                                   | 3.7                                                                               | 3.7                                                                               |                                                                                   | 3.3                                                                                 | 3.3                                                                                 |                                                                                     | 3.3                                                                                 | 3.3                                                                                 |                                                                                     |
| All-Red Time (s)        | 2.3                                                                               | 2.3                                                                               |                                                                                   | 2.3                                                                               | 2.3                                                                               |                                                                                   | 2.7                                                                                 | 2.7                                                                                 |                                                                                     | 2.7                                                                                 | 2.7                                                                                 |                                                                                     |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     | 6.0                                                                               | 6.0                                                                               |                                                                                   | 6.0                                                                               | 6.0                                                                               |                                                                                   | 6.0                                                                                 | 6.0                                                                                 |                                                                                     |                                                                                     | 6.0                                                                                 |                                                                                     |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                                 | 3.0                                                                                 |                                                                                     | 3.0                                                                                 | 3.0                                                                                 |                                                                                     |
| Recall Mode             | C-Max                                                                             | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             |                                                                                   | None                                                                                | None                                                                                |                                                                                     | None                                                                                | None                                                                                |                                                                                     |
| Walk Time (s)           | 7.0                                                                               | 7.0                                                                               |                                                                                   | 7.0                                                                               | 7.0                                                                               |                                                                                   | 7.0                                                                                 | 7.0                                                                                 |                                                                                     | 7.0                                                                                 | 7.0                                                                                 |                                                                                     |
| Flash Dont Walk (s)     | 10.0                                                                              | 10.0                                                                              |                                                                                   | 10.0                                                                              | 10.0                                                                              |                                                                                   | 19.0                                                                                | 19.0                                                                                |                                                                                     | 19.0                                                                                | 19.0                                                                                |                                                                                     |
| Pedestrian Calls (#/hr) | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Act Effect Green (s)    | 76.0                                                                              | 76.0                                                                              |                                                                                   | 76.0                                                                              | 76.0                                                                              |                                                                                   | 6.5                                                                                 | 6.5                                                                                 |                                                                                     |                                                                                     | 6.0                                                                                 |                                                                                     |
| Actuated g/C Ratio      | 0.95                                                                              | 0.95                                                                              |                                                                                   | 0.95                                                                              | 0.95                                                                              |                                                                                   | 0.08                                                                                | 0.08                                                                                |                                                                                     |                                                                                     | 0.08                                                                                |                                                                                     |
| v/c Ratio               | 0.00                                                                              | 0.23                                                                              |                                                                                   | 0.03                                                                              | 0.07                                                                              |                                                                                   | 0.09                                                                                | 0.01                                                                                |                                                                                     |                                                                                     | 0.05                                                                                |                                                                                     |
| Control Delay           | 2.0                                                                               | 1.1                                                                               |                                                                                   | 1.5                                                                               | 0.9                                                                               |                                                                                   | 34.9                                                                                | 0.0                                                                                 |                                                                                     |                                                                                     | 0.5                                                                                 |                                                                                     |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Delay             | 2.0                                                                               | 1.1                                                                               |                                                                                   | 1.5                                                                               | 0.9                                                                               |                                                                                   | 34.9                                                                                | 0.0                                                                                 |                                                                                     |                                                                                     | 0.5                                                                                 |                                                                                     |

3: Urbandale Plaza & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
AM Peak Hour

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| LOS                    | A                                                                                 | A                                                                                 |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   | C                                                                                  | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |
| Approach Delay         |                                                                                   | 1.1                                                                               |                                                                                   |                                                                                   | 1.0                                                                               |                                                                                   |                                                                                    | 27.9                                                                                |                                                                                     |                                                                                     | 0.5                                                                                 |                                                                                     |
| Approach LOS           |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |
| Queue Length 50th (m)  | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 1.7                                                                                | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Queue Length 95th (m)  | 0.3                                                                               | 20.5                                                                              |                                                                                   | 2.2                                                                               | 5.9                                                                               |                                                                                   | 6.4                                                                                | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Internal Link Dist (m) |                                                                                   | 230.5                                                                             |                                                                                   |                                                                                   | 219.4                                                                             |                                                                                   |                                                                                    | 104.6                                                                               |                                                                                     |                                                                                     | 97.2                                                                                |                                                                                     |
| Turn Bay Length (m)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)    | 1065                                                                              | 3239                                                                              |                                                                                   | 603                                                                               | 3097                                                                              |                                                                                   | 522                                                                                | 603                                                                                 |                                                                                     |                                                                                     | 595                                                                                 |                                                                                     |
| Starvation Cap Reductn | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn    | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio      | 0.00                                                                              | 0.23                                                                              |                                                                                   | 0.03                                                                              | 0.07                                                                              |                                                                                   | 0.02                                                                               | 0.00                                                                                |                                                                                     |                                                                                     | 0.01                                                                                |                                                                                     |

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.23

Intersection Signal Delay: 1.5

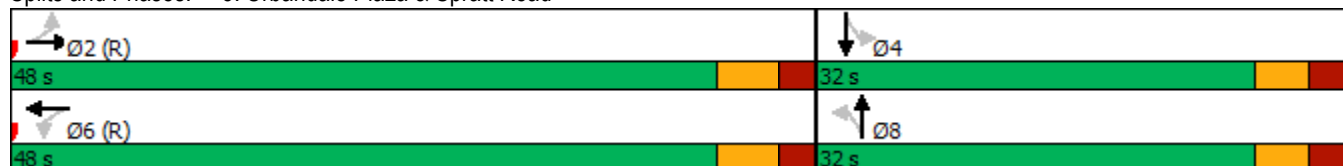
Intersection LOS: A

Intersection Capacity Utilization 38.5%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 3: Urbandale Plaza & Spratt Road



4: Limebank Road & Realigned Leitrim Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
AM Peak Hour

|                         |  |       |      |       |       |      |       |       |       |       |       |      |
|-------------------------|------------------------------------------------------------------------------------|-------|------|-------|-------|------|-------|-------|-------|-------|-------|------|
| Lane Group              | EBL                                                                                | EBT   | EBR  | WBL   | WBT   | WBR  | NBL   | NBT   | NBR   | SBL   | SBT   | SBR  |
| Lane Configurations     |                                                                                    |       |      |       |       |      |       |       |       |       |       |      |
| Traffic Volume (vph)    | 61                                                                                 | 0     | 45   | 15    | 0     | 5    | 277   | 1836  | 0     | 113   | 534   | 373  |
| Future Volume (vph)     | 61                                                                                 | 0     | 45   | 15    | 0     | 5    | 277   | 1836  | 0     | 113   | 534   | 373  |
| Ideal Flow (vphpl)      | 1800                                                                               | 1800  | 1800 | 1800  | 1800  | 1800 | 1800  | 1800  | 1800  | 1800  | 1800  | 1800 |
| Storage Length (m)      | 90.0                                                                               |       | 0.0  | 125.0 |       | 0.0  | 90.0  |       | 160.0 | 90.0  |       | 0.0  |
| Storage Lanes           | 1                                                                                  |       | 0    | 2     |       | 0    | 1     |       | 1     | 1     |       | 0    |
| Taper Length (m)        | 7.6                                                                                |       |      | 2.5   |       |      | 7.6   |       |       | 7.6   |       |      |
| Lane Util. Factor       | 1.00                                                                               | 0.95  | 0.95 | 0.97  | 0.95  | 0.95 | 1.00  | 0.95  | 1.00  | 1.00  | 0.95  | 0.95 |
| Frt                     |                                                                                    | 0.850 |      |       | 0.850 |      |       |       |       |       | 0.938 |      |
| Flt Protected           | 0.950                                                                              |       |      | 0.950 |       |      | 0.950 |       |       | 0.950 |       |      |
| Satd. Flow (prot)       | 1544                                                                               | 2624  | 0    | 3354  | 2939  | 0    | 1544  | 3357  | 1820  | 1729  | 2942  | 0    |
| Flt Permitted           | 0.444                                                                              |       |      | 0.950 |       |      | 0.173 |       |       | 0.099 |       |      |
| Satd. Flow (perm)       | 722                                                                                | 2624  | 0    | 3354  | 2939  | 0    | 281   | 3357  | 1820  | 180   | 2942  | 0    |
| Right Turn on Red       |                                                                                    |       | Yes  |       |       | Yes  |       |       | Yes   |       |       | Yes  |
| Satd. Flow (RTOR)       |                                                                                    | 373   |      |       | 224   |      |       |       |       |       | 139   |      |
| Link Speed (k/h)        |                                                                                    | 48    |      |       | 48    |      |       | 80    |       |       | 80    |      |
| Link Distance (m)       |                                                                                    | 472.7 |      |       | 426.7 |      |       | 635.3 |       |       | 509.3 |      |
| Travel Time (s)         |                                                                                    | 35.5  |      |       | 32.0  |      |       | 28.6  |       |       | 22.9  |      |
| Peak Hour Factor        | 1.00                                                                               | 1.00  | 1.00 | 1.00  | 1.00  | 1.00 | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00 |
| Heavy Vehicles (%)      | 12%                                                                                | 12%   | 12%  | 0%    | 12%   | 0%   | 12%   | 3%    | 0%    | 0%    | 9%    | 12%  |
| Adj. Flow (vph)         | 61                                                                                 | 0     | 45   | 15    | 0     | 5    | 277   | 1836  | 0     | 113   | 534   | 373  |
| Shared Lane Traffic (%) |                                                                                    |       |      |       |       |      |       |       |       |       |       |      |
| Lane Group Flow (vph)   | 61                                                                                 | 45    | 0    | 15    | 5     | 0    | 277   | 1836  | 0     | 113   | 907   | 0    |
| Turn Type               | pm+pt                                                                              | NA    |      | Prot  | NA    |      | pm+pt | NA    | Perm  | pm+pt | NA    |      |
| Protected Phases        | 7                                                                                  | 4     |      | 3     | 8     |      | 5     | 2     |       | 1     | 6     |      |
| Permitted Phases        | 4                                                                                  |       |      |       |       |      | 2     |       | 2     | 6     |       |      |
| Detector Phase          | 7                                                                                  | 4     |      | 3     | 8     |      | 5     | 2     | 2     | 1     | 6     |      |
| Switch Phase            |                                                                                    |       |      |       |       |      |       |       |       |       |       |      |
| Minimum Initial (s)     | 5.0                                                                                | 10.0  |      | 5.0   | 10.0  |      | 5.0   | 10.0  | 10.0  | 5.0   | 10.0  |      |
| Minimum Split (s)       | 12.5                                                                               | 43.6  |      | 12.5  | 43.6  |      | 12.4  | 39.3  | 39.3  | 12.4  | 39.3  |      |
| Total Split (s)         | 13.0                                                                               | 44.0  |      | 13.0  | 44.0  |      | 27.0  | 60.0  | 60.0  | 13.0  | 46.0  |      |
| Total Split (%)         | 10.0%                                                                              | 33.8% |      | 10.0% | 33.8% |      | 20.8% | 46.2% | 46.2% | 10.0% | 35.4% |      |
| Maximum Green (s)       | 5.5                                                                                | 36.5  |      | 5.5   | 36.5  |      | 19.6  | 52.6  | 52.6  | 5.6   | 38.6  |      |
| Yellow Time (s)         | 4.1                                                                                | 4.1   |      | 4.1   | 4.1   |      | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   |      |
| All-Red Time (s)        | 3.4                                                                                | 3.4   |      | 3.4   | 3.4   |      | 2.4   | 2.4   | 2.4   | 2.4   | 2.4   |      |
| Lost Time Adjust (s)    | 0.0                                                                                | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |      |
| Total Lost Time (s)     | 7.5                                                                                | 7.5   |      | 7.5   | 7.5   |      | 7.4   | 7.4   | 7.4   | 7.4   | 7.4   |      |
| Lead/Lag                | Lead                                                                               | Lag   |      | Lead  | Lag   |      | Lead  | Lag   | Lag   | Lead  | Lag   |      |
| Lead-Lag Optimize?      | Yes                                                                                | Yes   |      | Yes   | Yes   |      | Yes   | Yes   | Yes   | Yes   | Yes   |      |
| Vehicle Extension (s)   | 3.0                                                                                | 3.0   |      | 3.0   | 3.0   |      | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   |      |
| Recall Mode             | None                                                                               | None  |      | None  | None  |      | None  | Min   | Min   | None  | Min   |      |
| Walk Time (s)           |                                                                                    | 7.0   |      |       | 7.0   |      |       | 7.0   | 7.0   |       | 7.0   |      |
| Flash Dont Walk (s)     |                                                                                    | 29.1  |      |       | 29.1  |      |       | 24.9  | 24.9  |       | 24.9  |      |
| Pedestrian Calls (#/hr) |                                                                                    | 0     |      |       | 0     |      |       | 0     | 0     |       | 0     |      |
| Act Effect Green (s)    | 12.3                                                                               | 10.2  |      | 5.6   | 10.2  |      | 66.7  | 53.5  |       | 46.1  | 40.4  |      |
| Actuated g/C Ratio      | 0.13                                                                               | 0.11  |      | 0.06  | 0.11  |      | 0.72  | 0.58  |       | 0.50  | 0.44  |      |
| v/c Ratio               | 0.32                                                                               | 0.07  |      | 0.07  | 0.01  |      | 0.60  | 0.94  |       | 0.61  | 0.66  |      |
| Control Delay           | 39.8                                                                               | 0.2   |      | 46.3  | 0.0   |      | 16.4  | 32.4  |       | 33.7  | 22.4  |      |
| Queue Delay             | 0.0                                                                                | 0.0   |      | 0.0   | 0.0   |      | 0.0   | 0.0   |       | 0.0   | 0.0   |      |

4: Limebank Road & Realigned Leitrim Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
AM Peak Hour

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Total Delay            | 39.8                                                                              | 0.2                                                                               |                                                                                   | 46.3                                                                              | 0.0                                                                               |                                                                                   | 16.4                                                                                | 32.4                                                                                |                                                                                     | 33.7                                                                                | 22.4                                                                                |                                                                                     |
| LOS                    | D                                                                                 | A                                                                                 |                                                                                   | D                                                                                 | A                                                                                 |                                                                                   | B                                                                                   | C                                                                                   |                                                                                     | C                                                                                   | C                                                                                   |                                                                                     |
| Approach Delay         |                                                                                   | 23.0                                                                              |                                                                                   |                                                                                   | 34.7                                                                              |                                                                                   |                                                                                     | 30.3                                                                                |                                                                                     |                                                                                     | 23.7                                                                                |                                                                                     |
| Approach LOS           |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Queue Length 50th (m)  | 10.0                                                                              | 0.0                                                                               |                                                                                   | 1.2                                                                               | 0.0                                                                               |                                                                                   | 13.5                                                                                | 143.9                                                                               |                                                                                     | 4.8                                                                                 | 55.3                                                                                |                                                                                     |
| Queue Length 95th (m)  | 21.0                                                                              | 0.0                                                                               |                                                                                   | 4.8                                                                               | 0.0                                                                               |                                                                                   | 50.4                                                                                | #259.7                                                                              |                                                                                     | #33.4                                                                               | 95.7                                                                                |                                                                                     |
| Internal Link Dist (m) |                                                                                   | 448.7                                                                             |                                                                                   |                                                                                   | 402.7                                                                             |                                                                                   |                                                                                     | 611.3                                                                               |                                                                                     |                                                                                     | 485.3                                                                               |                                                                                     |
| Turn Bay Length (m)    | 90.0                                                                              |                                                                                   |                                                                                   | 125.0                                                                             |                                                                                   |                                                                                   | 90.0                                                                                |                                                                                     |                                                                                     | 90.0                                                                                |                                                                                     |                                                                                     |
| Base Capacity (vph)    | 190                                                                               | 1278                                                                              |                                                                                   | 203                                                                               | 1316                                                                              |                                                                                   | 476                                                                                 | 1946                                                                                |                                                                                     | 185                                                                                 | 1367                                                                                |                                                                                     |
| Starvation Cap Reductn | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn    | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio      | 0.32                                                                              | 0.04                                                                              |                                                                                   | 0.07                                                                              | 0.00                                                                              |                                                                                   | 0.58                                                                                | 0.94                                                                                |                                                                                     | 0.61                                                                                | 0.66                                                                                |                                                                                     |

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 92.2

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.94

Intersection Signal Delay: 28.0

Intersection LOS: C

Intersection Capacity Utilization 89.0%

ICU Level of Service E

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 4: Limebank Road & Realigned Leitrim Road

|                                                                                        |                                                                                        |                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |  Ø3 |  Ø4 |
| 13 s                                                                                   | 60 s                                                                                   | 13 s                                                                                   | 44 s                                                                                     |
|  Ø5 |  Ø6 |  Ø7 |  Ø8 |
| 27 s                                                                                   | 46 s                                                                                   | 13 s                                                                                   | 44 s                                                                                     |

1: Limebank Road & Leitrim Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
PM Peak Hour

|                         |  |       |       |       |       |       |       |       |       |       |       |       |
|-------------------------|------------------------------------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Group              | EBL                                                                                | EBT   | EBR   | WBL   | WBT   | WBR   | NBL   | NBT   | NBR   | SBL   | SBT   | SBR   |
| Lane Configurations     | LT                                                                                 | TH    | RT    | LT    | TH    | RT    | LT    | TH    | RT    | LT    | TH    | RT    |
| Traffic Volume (vph)    | 11                                                                                 | 190   | 30    | 508   | 277   | 212   | 4     | 733   | 335   | 280   | 1167  | 6     |
| Future Volume (vph)     | 11                                                                                 | 190   | 30    | 508   | 277   | 212   | 4     | 733   | 335   | 280   | 1167  | 6     |
| Ideal Flow (vphpl)      | 1800                                                                               | 1800  | 1800  | 1800  | 1800  | 1800  | 1800  | 1800  | 1800  | 1800  | 1800  | 1800  |
| Storage Length (m)      | 130.0                                                                              |       | 130.0 | 120.0 |       | 150.0 | 195.0 |       | 180.0 | 210.0 |       | 185.0 |
| Storage Lanes           | 2                                                                                  |       | 1     | 2     |       | 1     | 2     |       | 1     | 2     |       | 1     |
| Taper Length (m)        | 7.6                                                                                |       |       | 7.6   |       |       | 7.6   |       |       | 7.6   |       |       |
| Lane Util. Factor       | 0.97                                                                               | 1.00  | 1.00  | 0.97  | 1.00  | 1.00  | 0.97  | 0.95  | 1.00  | 0.97  | 0.95  | 1.00  |
| Ped Bike Factor         |                                                                                    |       |       |       |       |       |       |       | 0.99  | 1.00  |       |       |
| Frt                     |                                                                                    |       | 0.850 |       |       | 0.850 |       |       | 0.850 |       |       | 0.850 |
| Flt Protected           | 0.950                                                                              |       |       | 0.950 |       |       | 0.950 |       |       | 0.950 |       |       |
| Satd. Flow (prot)       | 3354                                                                               | 1767  | 1381  | 3257  | 1802  | 1488  | 3354  | 3325  | 1419  | 3106  | 3424  | 1289  |
| Flt Permitted           | 0.950                                                                              |       |       | 0.950 |       |       | 0.950 |       |       | 0.950 |       |       |
| Satd. Flow (perm)       | 3354                                                                               | 1767  | 1381  | 3257  | 1802  | 1488  | 3354  | 3325  | 1400  | 3102  | 3424  | 1289  |
| Right Turn on Red       |                                                                                    |       | Yes   |       |       | Yes   |       |       | Yes   |       |       | Yes   |
| Satd. Flow (RTOR)       |                                                                                    |       | 232   |       |       | 212   |       |       | 335   |       |       | 181   |
| Link Speed (k/h)        |                                                                                    | 80    |       |       | 80    |       |       | 80    |       |       | 80    |       |
| Link Distance (m)       |                                                                                    | 395.5 |       |       | 472.5 |       |       | 509.3 |       |       | 517.2 |       |
| Travel Time (s)         |                                                                                    | 17.8  |       |       | 21.3  |       |       | 22.9  |       |       | 23.3  |       |
| Confl. Peds. (#/hr)     |                                                                                    |       |       |       |       |       |       |       | 1     | 1     |       |       |
| Peak Hour Factor        | 1.00                                                                               | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  |
| Heavy Vehicles (%)      | 0%                                                                                 | 3%    | 12%   | 3%    | 1%    | 4%    | 0%    | 4%    | 9%    | 8%    | 1%    | 20%   |
| Adj. Flow (vph)         | 11                                                                                 | 190   | 30    | 508   | 277   | 212   | 4     | 733   | 335   | 280   | 1167  | 6     |
| Shared Lane Traffic (%) |                                                                                    |       |       |       |       |       |       |       |       |       |       |       |
| Lane Group Flow (vph)   | 11                                                                                 | 190   | 30    | 508   | 277   | 212   | 4     | 733   | 335   | 280   | 1167  | 6     |
| Turn Type               | Prot                                                                               | NA    | Perm  | Prot  | NA    | Perm  | Prot  | NA    | Perm  | Prot  | NA    | Perm  |
| Protected Phases        | 7                                                                                  | 4     |       | 3     | 8     |       | 5     | 2     |       | 1     | 6     |       |
| Permitted Phases        |                                                                                    |       | 4     |       |       | 8     |       |       | 2     |       |       | 6     |
| Detector Phase          | 7                                                                                  | 4     | 4     | 3     | 8     | 8     | 5     | 2     | 2     | 1     | 6     | 6     |
| Switch Phase            |                                                                                    |       |       |       |       |       |       |       |       |       |       |       |
| Minimum Initial (s)     | 5.0                                                                                | 10.0  | 10.0  | 5.0   | 10.0  | 10.0  | 5.0   | 21.0  | 21.0  | 5.0   | 21.0  | 21.0  |
| Minimum Split (s)       | 11.1                                                                               | 30.8  | 30.8  | 11.1  | 30.8  | 30.8  | 11.6  | 27.6  | 27.6  | 11.6  | 27.6  | 27.6  |
| Total Split (s)         | 16.1                                                                               | 31.8  | 31.8  | 26.1  | 31.8  | 31.8  | 16.6  | 51.6  | 51.6  | 26.6  | 36.6  | 36.6  |
| Total Split (%)         | 11.8%                                                                              | 23.4% | 23.4% | 19.2% | 23.4% | 23.4% | 12.2% | 37.9% | 37.9% | 19.5% | 26.9% | 26.9% |
| Maximum Green (s)       | 10.0                                                                               | 25.0  | 25.0  | 20.0  | 25.0  | 25.0  | 10.0  | 45.0  | 45.0  | 20.0  | 30.0  | 30.0  |
| Yellow Time (s)         | 4.2                                                                                | 4.2   | 4.2   | 4.2   | 4.2   | 4.2   | 4.6   | 4.6   | 4.6   | 4.6   | 4.6   | 4.6   |
| All-Red Time (s)        | 1.9                                                                                | 2.6   | 2.6   | 1.9   | 2.6   | 2.6   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   | 2.0   |
| Lost Time Adjust (s)    | 0.0                                                                                | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)     | 6.1                                                                                | 6.8   | 6.8   | 6.1   | 6.8   | 6.8   | 6.6   | 6.6   | 6.6   | 6.6   | 6.6   | 6.6   |
| Lead/Lag                | Lead                                                                               | Lag   | Lag   | Lead  | Lag   | Lag   | Lead  | Lag   | Lag   | Lead  | Lag   | Lag   |
| Lead-Lag Optimize?      | Yes                                                                                | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   |
| Vehicle Extension (s)   | 3.0                                                                                | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   | 3.0   |
| Recall Mode             | None                                                                               | None  | None  | None  | None  | None  | None  | Min   | Min   | None  | Min   | Min   |
| Walk Time (s)           |                                                                                    | 7.0   | 7.0   |       | 7.0   | 7.0   |       | 7.0   | 7.0   |       | 7.0   | 7.0   |
| Flash Dont Walk (s)     |                                                                                    | 17.0  | 17.0  |       | 17.0  | 17.0  |       | 14.0  | 14.0  |       | 14.0  | 14.0  |
| Pedestrian Calls (#/hr) |                                                                                    | 0     | 0     |       | 0     | 0     |       | 0     | 0     |       | 0     | 0     |
| Act Effect Green (s)    | 6.0                                                                                | 17.4  | 17.4  | 20.5  | 42.0  | 42.0  | 5.8   | 32.5  | 32.5  | 15.3  | 52.5  | 52.5  |
| Actuated g/C Ratio      | 0.05                                                                               | 0.15  | 0.15  | 0.18  | 0.37  | 0.37  | 0.05  | 0.29  | 0.29  | 0.14  | 0.47  | 0.47  |
| v/c Ratio               | 0.06                                                                               | 0.70  | 0.07  | 0.86  | 0.41  | 0.31  | 0.02  | 0.76  | 0.52  | 0.66  | 0.73  | 0.01  |

1: Limebank Road & Leitrim Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
PM Peak Hour

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Control Delay          | 58.7                                                                              | 60.8                                                                              | 0.3                                                                               | 61.9                                                                              | 31.8                                                                              | 5.7                                                                               | 59.2                                                                               | 42.6                                                                                | 6.5                                                                                 | 56.1                                                                                | 28.3                                                                                | 0.0                                                                                 |
| Queue Delay            | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay            | 58.7                                                                              | 60.8                                                                              | 0.3                                                                               | 61.9                                                                              | 31.8                                                                              | 5.7                                                                               | 59.2                                                                               | 42.6                                                                                | 6.5                                                                                 | 56.1                                                                                | 28.3                                                                                | 0.0                                                                                 |
| LOS                    | E                                                                                 | E                                                                                 | A                                                                                 | E                                                                                 | C                                                                                 | A                                                                                 | E                                                                                  | D                                                                                   | A                                                                                   | E                                                                                   | C                                                                                   | A                                                                                   |
| Approach Delay         | 52.8                                                                              |                                                                                   |                                                                                   | 41.6                                                                              |                                                                                   |                                                                                   | 31.4                                                                               |                                                                                     |                                                                                     | 33.5                                                                                |                                                                                     |                                                                                     |
| Approach LOS           | D                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | C                                                                                  |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Queue Length 50th (m)  | 1.1                                                                               | 39.7                                                                              | 0.0                                                                               | 56.1                                                                              | 42.9                                                                              | 0.0                                                                               | 0.4                                                                                | 76.6                                                                                | 0.0                                                                                 | 30.2                                                                                | 100.5                                                                               | 0.0                                                                                 |
| Queue Length 95th (m)  | 4.7                                                                               | 72.6                                                                              | 0.0                                                                               | #112.1                                                                            | 92.2                                                                              | 18.6                                                                              | 2.5                                                                                | 110.6                                                                               | 21.7                                                                                | 51.8                                                                                | 167.8                                                                               | 0.0                                                                                 |
| Internal Link Dist (m) | 371.5                                                                             |                                                                                   |                                                                                   | 448.5                                                                             |                                                                                   |                                                                                   | 485.3                                                                              |                                                                                     |                                                                                     | 493.2                                                                               |                                                                                     |                                                                                     |
| Turn Bay Length (m)    | 130.0                                                                             |                                                                                   | 130.0                                                                             | 120.0                                                                             |                                                                                   | 150.0                                                                             | 195.0                                                                              |                                                                                     | 180.0                                                                               | 210.0                                                                               |                                                                                     | 185.0                                                                               |
| Base Capacity (vph)    | 305                                                                               | 401                                                                               | 493                                                                               | 592                                                                               | 672                                                                               | 688                                                                               | 305                                                                                | 1361                                                                                | 770                                                                                 | 564                                                                                 | 1777                                                                                | 756                                                                                 |
| Starvation Cap Reductn | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio      | 0.04                                                                              | 0.47                                                                              | 0.06                                                                              | 0.86                                                                              | 0.41                                                                              | 0.31                                                                              | 0.01                                                                               | 0.54                                                                                | 0.44                                                                                | 0.50                                                                                | 0.66                                                                                | 0.01                                                                                |

Intersection Summary

Area Type: Other

Cycle Length: 136.1

Actuated Cycle Length: 112.5

Natural Cycle: 105

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 36.2

Intersection LOS: D

Intersection Capacity Utilization 85.8%

ICU Level of Service E

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Limebank Road & Leitrim Road

|                                                                                     |                                                                                     |                                                                                     |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |  |
| Ø1                                                                                  | Ø2                                                                                  | Ø3                                                                                  | Ø4                                                                                    |
| 26.6 s                                                                              | 51.6 s                                                                              | 26.1 s                                                                              | 31.8 s                                                                                |
|  |  |  |  |
| Ø5                                                                                  | Ø6                                                                                  | Ø7                                                                                  | Ø8                                                                                    |
| 16.6 s                                                                              | 36.6 s                                                                              | 16.1 s                                                                              | 31.8 s                                                                                |

2: Limebank Road & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
PM Peak Hour

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBU                                                                                | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBU                                                                                 | SBL                                                                                 |
| Lane Configurations     |  |  |                                                                                   |  |  |  |                                                                                    |  |  |  |                                                                                     |  |
| Traffic Volume (vph)    | 185                                                                               | 27                                                                                | 36                                                                                | 25                                                                                | 18                                                                                | 21                                                                                | 26                                                                                 | 43                                                                                  | 418                                                                                 | 34                                                                                  | 1                                                                                   | 63                                                                                  |
| Future Volume (vph)     | 185                                                                               | 27                                                                                | 36                                                                                | 25                                                                                | 18                                                                                | 21                                                                                | 26                                                                                 | 43                                                                                  | 418                                                                                 | 34                                                                                  | 1                                                                                   | 63                                                                                  |
| Ideal Flow (vphpl)      | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                               | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                |
| Storage Length (m)      | 100.0                                                                             |                                                                                   | 0.0                                                                               | 95.0                                                                              |                                                                                   | 60.0                                                                              |                                                                                    | 205.0                                                                               |                                                                                     | 180.0                                                                               |                                                                                     | 255.0                                                                               |
| Storage Lanes           | 2                                                                                 |                                                                                   | 0                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 |                                                                                    | 2                                                                                   |                                                                                     | 1                                                                                   |                                                                                     | 2                                                                                   |
| Taper Length (m)        | 7.6                                                                               |                                                                                   |                                                                                   | 7.6                                                                               |                                                                                   |                                                                                   |                                                                                    | 7.6                                                                                 |                                                                                     |                                                                                     |                                                                                     | 7.6                                                                                 |
| Lane Util. Factor       | 0.97                                                                              | 0.95                                                                              | 0.95                                                                              | 0.97                                                                              | 0.95                                                                              | 1.00                                                                              | 0.95                                                                               | 0.97                                                                                | 0.95                                                                                | 1.00                                                                                | 0.95                                                                                | 0.97                                                                                |
| Ped Bike Factor         | 1.00                                                                              | 0.99                                                                              |                                                                                   | 0.99                                                                              |                                                                                   | 0.99                                                                              |                                                                                    | 1.00                                                                                |                                                                                     | 0.98                                                                                |                                                                                     | 1.00                                                                                |
| Frt                     |                                                                                   | 0.914                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                    |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     |
| Flt Protected           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                    | 0.950                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.950                                                                               |
| Satd. Flow (prot)       | 3321                                                                              | 3083                                                                              | 0                                                                                 | 3257                                                                              | 3293                                                                              | 1473                                                                              | 0                                                                                  | 3313                                                                                | 3232                                                                                | 1517                                                                                | 0                                                                                   | 3289                                                                                |
| Flt Permitted           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                    | 0.950                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.950                                                                               |
| Satd. Flow (perm)       | 3315                                                                              | 3083                                                                              | 0                                                                                 | 3210                                                                              | 3293                                                                              | 1454                                                                              | 0                                                                                  | 3311                                                                                | 3232                                                                                | 1492                                                                                | 0                                                                                   | 3280                                                                                |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Satd. Flow (RTOR)       |                                                                                   | 36                                                                                |                                                                                   |                                                                                   |                                                                                   | 269                                                                               |                                                                                    |                                                                                     |                                                                                     | 267                                                                                 |                                                                                     |                                                                                     |
| Link Speed (k/h)        |                                                                                   | 60                                                                                |                                                                                   |                                                                                   | 60                                                                                |                                                                                   |                                                                                    |                                                                                     | 80                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Link Distance (m)       |                                                                                   | 243.4                                                                             |                                                                                   |                                                                                   | 525.1                                                                             |                                                                                   |                                                                                    |                                                                                     | 473.0                                                                               |                                                                                     |                                                                                     |                                                                                     |
| Travel Time (s)         |                                                                                   | 14.6                                                                              |                                                                                   |                                                                                   | 31.5                                                                              |                                                                                   |                                                                                    |                                                                                     | 21.3                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Confl. Peds. (#/hr)     | 1                                                                                 |                                                                                   | 9                                                                                 | 9                                                                                 |                                                                                   | 1                                                                                 |                                                                                    | 4                                                                                   |                                                                                     | 3                                                                                   |                                                                                     | 3                                                                                   |
| Confl. Bikes (#/hr)     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | 1                                                                                   |                                                                                     |                                                                                     |
| Peak Hour Factor        | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Heavy Vehicles (%)      | 1%                                                                                | 3%                                                                                | 0%                                                                                | 3%                                                                                | 5%                                                                                | 5%                                                                                | 0%                                                                                 | 2%                                                                                  | 7%                                                                                  | 2%                                                                                  | 0%                                                                                  | 2%                                                                                  |
| Adj. Flow (vph)         | 185                                                                               | 27                                                                                | 36                                                                                | 25                                                                                | 18                                                                                | 21                                                                                | 26                                                                                 | 43                                                                                  | 418                                                                                 | 34                                                                                  | 1                                                                                   | 63                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 185                                                                               | 63                                                                                | 0                                                                                 | 25                                                                                | 18                                                                                | 21                                                                                | 0                                                                                  | 69                                                                                  | 418                                                                                 | 34                                                                                  | 0                                                                                   | 64                                                                                  |
| Turn Type               | Prot                                                                              | NA                                                                                |                                                                                   | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                               | Prot                                                                                | NA                                                                                  | Perm                                                                                | Prot                                                                                | Prot                                                                                |
| Protected Phases        | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                  | 5                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   | 1                                                                                   |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 8                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 | 8                                                                                 | 5                                                                                  | 5                                                                                   | 2                                                                                   | 2                                                                                   | 1                                                                                   | 1                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 10.0                                                                              |                                                                                   | 5.0                                                                               | 10.0                                                                              | 10.0                                                                              | 5.0                                                                                | 5.0                                                                                 | 15.0                                                                                | 15.0                                                                                | 5.0                                                                                 | 5.0                                                                                 |
| Minimum Split (s)       | 11.5                                                                              | 41.5                                                                              |                                                                                   | 11.5                                                                              | 41.5                                                                              | 41.5                                                                              | 11.6                                                                               | 11.6                                                                                | 41.7                                                                                | 41.7                                                                                | 11.6                                                                                | 11.6                                                                                |
| Total Split (s)         | 31.5                                                                              | 31.5                                                                              |                                                                                   | 16.5                                                                              | 26.5                                                                              | 26.5                                                                              | 16.6                                                                               | 16.6                                                                                | 36.7                                                                                | 36.7                                                                                | 26.6                                                                                | 26.6                                                                                |
| Total Split (%)         | 26.0%                                                                             | 26.0%                                                                             |                                                                                   | 13.6%                                                                             | 21.8%                                                                             | 21.8%                                                                             | 13.7%                                                                              | 13.7%                                                                               | 30.3%                                                                               | 30.3%                                                                               | 21.9%                                                                               | 21.9%                                                                               |
| Maximum Green (s)       | 25.0                                                                              | 25.0                                                                              |                                                                                   | 10.0                                                                              | 20.0                                                                              | 20.0                                                                              | 10.0                                                                               | 10.0                                                                                | 30.0                                                                                | 30.0                                                                                | 20.0                                                                                | 20.0                                                                                |
| Yellow Time (s)         | 3.7                                                                               | 3.7                                                                               |                                                                                   | 3.7                                                                               | 3.7                                                                               | 3.7                                                                               | 4.6                                                                                | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 |
| All-Red Time (s)        | 2.8                                                                               | 2.8                                                                               |                                                                                   | 2.8                                                                               | 2.8                                                                               | 2.8                                                                               | 2.0                                                                                | 2.0                                                                                 | 2.1                                                                                 | 2.1                                                                                 | 2.0                                                                                 | 2.0                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 |
| Total Lost Time (s)     | 6.5                                                                               | 6.5                                                                               |                                                                                   | 6.5                                                                               | 6.5                                                                               | 6.5                                                                               |                                                                                    | 6.6                                                                                 | 6.7                                                                                 | 6.7                                                                                 |                                                                                     | 6.6                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                               | Lead                                                                                | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lead                                                                                |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              |                                                                                   | None                                                                              | None                                                                              | None                                                                              | None                                                                               | None                                                                                | Min                                                                                 | Min                                                                                 | None                                                                                | None                                                                                |
| Walk Time (s)           |                                                                                   | 10.0                                                                              |                                                                                   |                                                                                   | 10.0                                                                              | 10.0                                                                              |                                                                                    |                                                                                     | 10.0                                                                                | 10.0                                                                                |                                                                                     |                                                                                     |
| Flash Dont Walk (s)     |                                                                                   | 25.0                                                                              |                                                                                   |                                                                                   | 25.0                                                                              | 25.0                                                                              |                                                                                    |                                                                                     | 25.0                                                                                | 25.0                                                                                |                                                                                     |                                                                                     |
| Pedestrian Calls (#/hr) |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |
| Act Effect Green (s)    | 11.3                                                                              | 15.4                                                                              |                                                                                   | 6.3                                                                               | 10.3                                                                              | 10.3                                                                              |                                                                                    | 7.4                                                                                 | 41.4                                                                                | 41.4                                                                                |                                                                                     | 7.2                                                                                 |
| Actuated g/C Ratio      | 0.13                                                                              | 0.18                                                                              |                                                                                   | 0.07                                                                              | 0.12                                                                              | 0.12                                                                              |                                                                                    | 0.09                                                                                | 0.48                                                                                | 0.48                                                                                |                                                                                     | 0.08                                                                                |

2: Limebank Road & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
PM Peak Hour



| Lane Group              | SBT   | SBR   |
|-------------------------|-------|-------|
| Lane Configurations     | ↑↑    | ↑     |
| Traffic Volume (vph)    | 1268  | 440   |
| Future Volume (vph)     | 1268  | 440   |
| Ideal Flow (vphpl)      | 1800  | 1800  |
| Storage Length (m)      |       | 230.0 |
| Storage Lanes           |       | 1     |
| Taper Length (m)        |       |       |
| Lane Util. Factor       | 0.95  | 1.00  |
| Ped Bike Factor         |       | 0.98  |
| Frt                     |       | 0.850 |
| Flt Protected           |       |       |
| Satd. Flow (prot)       | 3424  | 1532  |
| Flt Permitted           |       |       |
| Satd. Flow (perm)       | 3424  | 1507  |
| Right Turn on Red       |       | Yes   |
| Satd. Flow (RTOR)       |       | 440   |
| Link Speed (k/h)        | 80    |       |
| Link Distance (m)       | 635.3 |       |
| Travel Time (s)         | 28.6  |       |
| Confl. Peds. (#/hr)     |       | 4     |
| Confl. Bikes (#/hr)     |       |       |
| Peak Hour Factor        | 1.00  | 1.00  |
| Heavy Vehicles (%)      | 1%    | 1%    |
| Adj. Flow (vph)         | 1268  | 440   |
| Shared Lane Traffic (%) |       |       |
| Lane Group Flow (vph)   | 1268  | 440   |
| Turn Type               | NA    | Perm  |
| Protected Phases        | 6     |       |
| Permitted Phases        |       | 6     |
| Detector Phase          | 6     | 6     |
| Switch Phase            |       |       |
| Minimum Initial (s)     | 15.0  | 15.0  |
| Minimum Split (s)       | 41.7  | 41.7  |
| Total Split (s)         | 46.7  | 46.7  |
| Total Split (%)         | 38.5% | 38.5% |
| Maximum Green (s)       | 40.0  | 40.0  |
| Yellow Time (s)         | 4.6   | 4.6   |
| All-Red Time (s)        | 2.1   | 2.1   |
| Lost Time Adjust (s)    | 0.0   | 0.0   |
| Total Lost Time (s)     | 6.7   | 6.7   |
| Lead/Lag                | Lag   | Lag   |
| Lead-Lag Optimize?      | Yes   | Yes   |
| Vehicle Extension (s)   | 3.0   | 3.0   |
| Recall Mode             | Min   | Min   |
| Walk Time (s)           | 10.0  | 10.0  |
| Flash Dont Walk (s)     | 25.0  | 25.0  |
| Pedestrian Calls (#/hr) | 0     | 0     |
| Act Effct Green (s)     | 41.3  | 41.3  |
| Actuated g/C Ratio      | 0.48  | 0.48  |

2: Limebank Road & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
PM Peak Hour

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBU                                                                                | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBU                                                                                 | SBL                                                                                 |
| v/c Ratio              | 0.42                                                                              | 0.11                                                                              |                                                                                   | 0.10                                                                              | 0.05                                                                              | 0.05                                                                              |                                                                                    | 0.24                                                                                | 0.27                                                                                | 0.04                                                                                |                                                                                     | 0.23                                                                                |
| Control Delay          | 40.3                                                                              | 18.4                                                                              |                                                                                   | 43.0                                                                              | 39.6                                                                              | 0.2                                                                               |                                                                                    | 42.7                                                                                | 16.7                                                                                | 0.1                                                                                 |                                                                                     | 42.8                                                                                |
| Queue Delay            | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 |
| Total Delay            | 40.3                                                                              | 18.4                                                                              |                                                                                   | 43.0                                                                              | 39.6                                                                              | 0.2                                                                               |                                                                                    | 42.7                                                                                | 16.7                                                                                | 0.1                                                                                 |                                                                                     | 42.8                                                                                |
| LOS                    | D                                                                                 | B                                                                                 |                                                                                   | D                                                                                 | D                                                                                 | A                                                                                 |                                                                                    | D                                                                                   | B                                                                                   | A                                                                                   |                                                                                     | D                                                                                   |
| Approach Delay         |                                                                                   | 34.8                                                                              |                                                                                   |                                                                                   | 28.0                                                                              |                                                                                   |                                                                                    |                                                                                     | 19.1                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS           |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Queue Length 50th (m)  | 16.5                                                                              | 1.8                                                                               |                                                                                   | 2.2                                                                               | 1.5                                                                               | 0.0                                                                               |                                                                                    | 6.2                                                                                 | 25.6                                                                                | 0.0                                                                                 |                                                                                     | 5.7                                                                                 |
| Queue Length 95th (m)  | 27.2                                                                              | 8.1                                                                               |                                                                                   | 6.4                                                                               | 5.0                                                                               | 0.0                                                                               |                                                                                    | 12.9                                                                                | 39.7                                                                                | 0.0                                                                                 |                                                                                     | 12.2                                                                                |
| Internal Link Dist (m) |                                                                                   | 219.4                                                                             |                                                                                   |                                                                                   | 501.1                                                                             |                                                                                   |                                                                                    |                                                                                     | 449.0                                                                               |                                                                                     |                                                                                     |                                                                                     |
| Turn Bay Length (m)    | 100.0                                                                             |                                                                                   |                                                                                   | 95.0                                                                              |                                                                                   | 60.0                                                                              |                                                                                    | 205.0                                                                               |                                                                                     | 180.0                                                                               |                                                                                     | 255.0                                                                               |
| Base Capacity (vph)    | 994                                                                               | 1313                                                                              |                                                                                   | 390                                                                               | 788                                                                               | 553                                                                               |                                                                                    | 396                                                                                 | 1558                                                                                | 857                                                                                 |                                                                                     | 787                                                                                 |
| Starvation Cap Reductn | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Storage Cap Reductn    | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Reduced v/c Ratio      | 0.19                                                                              | 0.05                                                                              |                                                                                   | 0.06                                                                              | 0.02                                                                              | 0.04                                                                              |                                                                                    | 0.17                                                                                | 0.27                                                                                | 0.04                                                                                |                                                                                     | 0.08                                                                                |

Intersection Summary

Area Type: Other

Cycle Length: 121.3

Actuated Cycle Length: 85.9

Natural Cycle: 110

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 22.1

Intersection LOS: C

Intersection Capacity Utilization 66.5%

ICU Level of Service C

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2: Limebank Road & Spratt Road

|                                                                                        |                                                                                        |                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |  Ø3 |  Ø4 |
| 26.6 s                                                                                 | 36.7 s                                                                                 | 16.5 s                                                                                 | 31.5 s                                                                                   |
|  Ø5 |  Ø6 |  Ø7 |  Ø8 |
| 16.6 s                                                                                 | 46.7 s                                                                                 | 31.5 s                                                                                 | 26.5 s                                                                                   |

2: Limebank Road & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
PM Peak Hour



| Lane Group             | SBT    | SBR   |
|------------------------|--------|-------|
| v/c Ratio              | 0.77   | 0.46  |
| Control Delay          | 25.9   | 3.7   |
| Queue Delay            | 0.0    | 0.0   |
| Total Delay            | 25.9   | 3.7   |
| LOS                    | C      | A     |
| Approach Delay         | 21.0   |       |
| Approach LOS           | C      |       |
| Queue Length 50th (m)  | 108.1  | 0.0   |
| Queue Length 95th (m)  | #162.3 | 17.7  |
| Internal Link Dist (m) | 611.3  |       |
| Turn Bay Length (m)    |        | 230.0 |
| Base Capacity (vph)    | 1646   | 953   |
| Starvation Cap Reductn | 0      | 0     |
| Spillback Cap Reductn  | 0      | 0     |
| Storage Cap Reductn    | 0      | 0     |
| Reduced v/c Ratio      | 0.77   | 0.46  |
| Intersection Summary   |        |       |

3: Urbandale Plaza & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
PM Peak Hour

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBU                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                                | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 |
| Lane Configurations     |  |  |                                                                                   |                                                                                   |  |  |                                                                                    |  |  |                                                                                     |                                                                                     |  |
| Traffic Volume (vph)    | 1                                                                                 | 239                                                                               | 30                                                                                | 2                                                                                 | 37                                                                                | 457                                                                               | 6                                                                                  | 58                                                                                  | 0                                                                                   | 3                                                                                   | 4                                                                                   | 0                                                                                   |
| Future Volume (vph)     | 1                                                                                 | 239                                                                               | 30                                                                                | 2                                                                                 | 37                                                                                | 457                                                                               | 6                                                                                  | 58                                                                                  | 0                                                                                   | 3                                                                                   | 4                                                                                   | 0                                                                                   |
| Ideal Flow (vphpl)      | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                               | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                |
| Lane Util. Factor       | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped Bike Factor         |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Frt                     |                                                                                   | 0.983                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.998                                                                             |                                                                                    |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.973                                                                               |
| Flt Protected           | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                    | 0.950                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.962                                                                               |
| Satd. Flow (prot)       | 1729                                                                              | 3359                                                                              | 0                                                                                 | 0                                                                                 | 1729                                                                              | 3417                                                                              | 0                                                                                  | 1712                                                                                | 1547                                                                                | 0                                                                                   | 0                                                                                   | 1704                                                                                |
| Flt Permitted           | 0.486                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.586                                                                             |                                                                                   |                                                                                    | 0.754                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.767                                                                               |
| Satd. Flow (perm)       | 885                                                                               | 3359                                                                              | 0                                                                                 | 0                                                                                 | 1061                                                                              | 3417                                                                              | 0                                                                                  | 1359                                                                                | 1547                                                                                | 0                                                                                   | 0                                                                                   | 1358                                                                                |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   | Yes                                                                                |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Satd. Flow (RTOR)       |                                                                                   | 25                                                                                |                                                                                   |                                                                                   |                                                                                   | 2                                                                                 |                                                                                    |                                                                                     | 588                                                                                 |                                                                                     |                                                                                     | 41                                                                                  |
| Link Speed (k/h)        |                                                                                   | 60                                                                                |                                                                                   |                                                                                   |                                                                                   | 60                                                                                |                                                                                    |                                                                                     | 50                                                                                  |                                                                                     |                                                                                     | 50                                                                                  |
| Link Distance (m)       |                                                                                   | 254.5                                                                             |                                                                                   |                                                                                   |                                                                                   | 243.4                                                                             |                                                                                    |                                                                                     | 128.6                                                                               |                                                                                     |                                                                                     | 121.2                                                                               |
| Travel Time (s)         |                                                                                   | 15.3                                                                              |                                                                                   |                                                                                   |                                                                                   | 14.6                                                                              |                                                                                    |                                                                                     | 9.3                                                                                 |                                                                                     |                                                                                     | 8.7                                                                                 |
| Confl. Peds. (#/hr)     |                                                                                   |                                                                                   | 3                                                                                 |                                                                                   | 3                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Peak Hour Factor        | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Heavy Vehicles (%)      | 0%                                                                                | 1%                                                                                | 0%                                                                                | 0%                                                                                | 0%                                                                                | 1%                                                                                | 0%                                                                                 | 1%                                                                                  | 0%                                                                                  | 0%                                                                                  | 0%                                                                                  | 0%                                                                                  |
| Adj. Flow (vph)         | 1                                                                                 | 239                                                                               | 30                                                                                | 2                                                                                 | 37                                                                                | 457                                                                               | 6                                                                                  | 58                                                                                  | 0                                                                                   | 3                                                                                   | 4                                                                                   | 0                                                                                   |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 1                                                                                 | 269                                                                               | 0                                                                                 | 0                                                                                 | 39                                                                                | 463                                                                               | 0                                                                                  | 58                                                                                  | 3                                                                                   | 0                                                                                   | 0                                                                                   | 5                                                                                   |
| Turn Type               | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | Perm                                                                              | NA                                                                                |                                                                                    | Perm                                                                                | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |
| Protected Phases        |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                    |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |
| Permitted Phases        | 2                                                                                 |                                                                                   |                                                                                   | 6                                                                                 | 6                                                                                 |                                                                                   |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |                                                                                     |
| Detector Phase          | 2                                                                                 | 2                                                                                 |                                                                                   | 6                                                                                 | 6                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   | 8                                                                                   |                                                                                     | 4                                                                                   | 4                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 10.0                                                                              | 10.0                                                                              |                                                                                   | 10.0                                                                              | 10.0                                                                              | 10.0                                                                              |                                                                                    | 5.0                                                                                 | 5.0                                                                                 |                                                                                     | 5.0                                                                                 | 5.0                                                                                 |
| Minimum Split (s)       | 24.0                                                                              | 24.0                                                                              |                                                                                   | 32.0                                                                              | 32.0                                                                              | 32.0                                                                              |                                                                                    | 32.0                                                                                | 32.0                                                                                |                                                                                     | 32.0                                                                                | 32.0                                                                                |
| Total Split (s)         | 48.0                                                                              | 48.0                                                                              |                                                                                   | 48.0                                                                              | 48.0                                                                              | 48.0                                                                              |                                                                                    | 32.0                                                                                | 32.0                                                                                |                                                                                     | 32.0                                                                                | 32.0                                                                                |
| Total Split (%)         | 60.0%                                                                             | 60.0%                                                                             |                                                                                   | 60.0%                                                                             | 60.0%                                                                             | 60.0%                                                                             |                                                                                    | 40.0%                                                                               | 40.0%                                                                               |                                                                                     | 40.0%                                                                               | 40.0%                                                                               |
| Maximum Green (s)       | 42.0                                                                              | 42.0                                                                              |                                                                                   | 42.0                                                                              | 42.0                                                                              | 42.0                                                                              |                                                                                    | 26.0                                                                                | 26.0                                                                                |                                                                                     | 26.0                                                                                | 26.0                                                                                |
| Yellow Time (s)         | 3.7                                                                               | 3.7                                                                               |                                                                                   | 3.7                                                                               | 3.7                                                                               | 3.7                                                                               |                                                                                    | 3.3                                                                                 | 3.3                                                                                 |                                                                                     | 3.3                                                                                 | 3.3                                                                                 |
| All-Red Time (s)        | 2.3                                                                               | 2.3                                                                               |                                                                                   | 2.3                                                                               | 2.3                                                                               | 2.3                                                                               |                                                                                    | 2.7                                                                                 | 2.7                                                                                 |                                                                                     | 2.7                                                                                 | 2.7                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                    | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |
| Total Lost Time (s)     | 6.0                                                                               | 6.0                                                                               |                                                                                   |                                                                                   | 6.0                                                                               | 6.0                                                                               |                                                                                    | 6.0                                                                                 | 6.0                                                                                 |                                                                                     |                                                                                     | 6.0                                                                                 |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |                                                                                    | 3.0                                                                                 | 3.0                                                                                 |                                                                                     | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | C-Max                                                                             | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             | C-Max                                                                             |                                                                                    | None                                                                                | None                                                                                |                                                                                     | None                                                                                | None                                                                                |
| Walk Time (s)           | 7.0                                                                               | 7.0                                                                               |                                                                                   | 7.0                                                                               | 7.0                                                                               | 7.0                                                                               |                                                                                    | 7.0                                                                                 | 7.0                                                                                 |                                                                                     | 7.0                                                                                 | 7.0                                                                                 |
| Flash Dont Walk (s)     | 10.0                                                                              | 10.0                                                                              |                                                                                   | 10.0                                                                              | 10.0                                                                              | 10.0                                                                              |                                                                                    | 19.0                                                                                | 19.0                                                                                |                                                                                     | 19.0                                                                                | 19.0                                                                                |
| Pedestrian Calls (#/hr) | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Act Effect Green (s)    | 66.5                                                                              | 66.5                                                                              |                                                                                   |                                                                                   | 66.5                                                                              | 66.5                                                                              |                                                                                    | 8.9                                                                                 | 8.9                                                                                 |                                                                                     |                                                                                     | 8.5                                                                                 |
| Actuated g/C Ratio      | 0.83                                                                              | 0.83                                                                              |                                                                                   |                                                                                   | 0.83                                                                              | 0.83                                                                              |                                                                                    | 0.11                                                                                | 0.11                                                                                |                                                                                     |                                                                                     | 0.11                                                                                |
| v/c Ratio               | 0.00                                                                              | 0.10                                                                              |                                                                                   |                                                                                   | 0.04                                                                              | 0.16                                                                              |                                                                                    | 0.39                                                                                | 0.00                                                                                |                                                                                     |                                                                                     | 0.03                                                                                |
| Control Delay           | 4.0                                                                               | 2.6                                                                               |                                                                                   |                                                                                   | 3.4                                                                               | 2.9                                                                               |                                                                                    | 39.5                                                                                | 0.0                                                                                 |                                                                                     |                                                                                     | 0.2                                                                                 |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                    | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |
| Total Delay             | 4.0                                                                               | 2.6                                                                               |                                                                                   |                                                                                   | 3.4                                                                               | 2.9                                                                               |                                                                                    | 39.5                                                                                | 0.0                                                                                 |                                                                                     |                                                                                     | 0.2                                                                                 |

3: Urbandale Plaza & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
PM Peak Hour

|                         |      |
|-------------------------|------|
| Lane Group              | SBR  |
| Lane Configurations     |      |
| Traffic Volume (vph)    | 1    |
| Future Volume (vph)     | 1    |
| Ideal Flow (vphpl)      | 1800 |
| Lane Util. Factor       | 1.00 |
| Ped Bike Factor         |      |
| Frt                     |      |
| Flt Protected           |      |
| Satd. Flow (prot)       | 0    |
| Flt Permitted           |      |
| Satd. Flow (perm)       | 0    |
| Right Turn on Red       | Yes  |
| Satd. Flow (RTOR)       |      |
| Link Speed (k/h)        |      |
| Link Distance (m)       |      |
| Travel Time (s)         |      |
| Confl. Peds. (#/hr)     |      |
| Peak Hour Factor        | 1.00 |
| Heavy Vehicles (%)      | 0%   |
| Adj. Flow (vph)         | 1    |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   | 0    |
| Turn Type               |      |
| Protected Phases        |      |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     |      |
| Minimum Split (s)       |      |
| Total Split (s)         |      |
| Total Split (%)         |      |
| Maximum Green (s)       |      |
| Yellow Time (s)         |      |
| All-Red Time (s)        |      |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                |      |
| Lead-Lag Optimize?      |      |
| Vehicle Extension (s)   |      |
| Recall Mode             |      |
| Walk Time (s)           |      |
| Flash Dont Walk (s)     |      |
| Pedestrian Calls (#/hr) |      |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |

3: Urbandale Plaza & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
PM Peak Hour

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBU                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                                 | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 |
| LOS                    | A                                                                                 | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 | A                                                                                 |                                                                                     | D                                                                                   | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |
| Approach Delay         |                                                                                   | 2.6                                                                               |                                                                                   |                                                                                   |                                                                                   | 2.9                                                                               |                                                                                     |                                                                                     | 37.6                                                                                |                                                                                     |                                                                                     | 0.2                                                                                 |
| Approach LOS           |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   | A                                                                                 |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |                                                                                     | A                                                                                   |
| Queue Length 50th (m)  | 0.0                                                                               | 4.3                                                                               |                                                                                   |                                                                                   | 1.3                                                                               | 8.7                                                                               |                                                                                     | 8.3                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |
| Queue Length 95th (m)  | 0.4                                                                               | 8.8                                                                               |                                                                                   |                                                                                   | 4.2                                                                               | 15.9                                                                              |                                                                                     | 18.4                                                                                | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |
| Internal Link Dist (m) |                                                                                   | 230.5                                                                             |                                                                                   |                                                                                   |                                                                                   | 219.4                                                                             |                                                                                     |                                                                                     | 104.6                                                                               |                                                                                     |                                                                                     | 97.2                                                                                |
| Turn Bay Length (m)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)    | 735                                                                               | 2794                                                                              |                                                                                   |                                                                                   | 881                                                                               | 2839                                                                              |                                                                                     | 441                                                                                 | 899                                                                                 |                                                                                     |                                                                                     | 469                                                                                 |
| Starvation Cap Reductn | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |
| Storage Cap Reductn    | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |
| Reduced v/c Ratio      | 0.00                                                                              | 0.10                                                                              |                                                                                   |                                                                                   | 0.04                                                                              | 0.16                                                                              |                                                                                     | 0.13                                                                                | 0.00                                                                                |                                                                                     |                                                                                     | 0.01                                                                                |

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.39

Intersection Signal Delay: 5.3

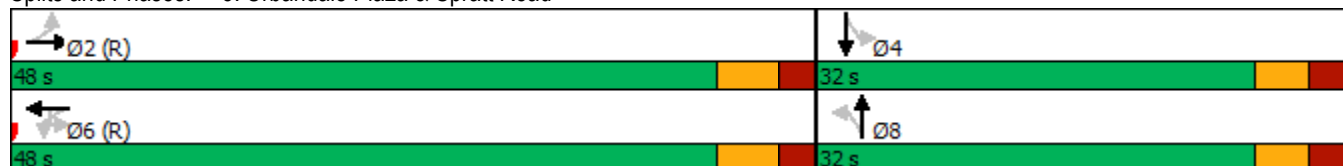
Intersection LOS: A

Intersection Capacity Utilization 41.7%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 3: Urbandale Plaza & Spratt Road



3: Urbandale Plaza & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
PM Peak Hour



|                        |     |
|------------------------|-----|
| Lane Group             | SBR |
| LOS                    |     |
| Approach Delay         |     |
| Approach LOS           |     |
| Queue Length 50th (m)  |     |
| Queue Length 95th (m)  |     |
| Internal Link Dist (m) |     |
| Turn Bay Length (m)    |     |
| Base Capacity (vph)    |     |
| Starvation Cap Reductn |     |
| Spillback Cap Reductn  |     |
| Storage Cap Reductn    |     |
| Reduced v/c Ratio      |     |
| Intersection Summary   |     |

4: Limebank Road & Realigned Leitrim Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
PM Peak Hour

|                         |  |  |  |  |  |  |   |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |  |  |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (vph)    | 323                                                                               | 0                                                                                 | 239                                                                               | 46                                                                                | 0                                                                                 | 8                                                                                 | 60                                                                                  | 644                                                                                 | 0                                                                                   | 56                                                                                  | 1675                                                                                | 80                                                                                  |
| Future Volume (vph)     | 323                                                                               | 0                                                                                 | 239                                                                               | 46                                                                                | 0                                                                                 | 8                                                                                 | 60                                                                                  | 644                                                                                 | 0                                                                                   | 56                                                                                  | 1675                                                                                | 80                                                                                  |
| Ideal Flow (vphpl)      | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                |
| Storage Length (m)      | 90.0                                                                              |                                                                                   | 0.0                                                                               | 125.0                                                                             |                                                                                   | 0.0                                                                               | 90.0                                                                                |                                                                                     | 160.0                                                                               | 90.0                                                                                |                                                                                     | 0.0                                                                                 |
| Storage Lanes           | 1                                                                                 |                                                                                   | 0                                                                                 | 2                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                   |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (m)        | 7.6                                                                               |                                                                                   |                                                                                   | 2.5                                                                               |                                                                                   |                                                                                   | 7.6                                                                                 |                                                                                     |                                                                                     | 7.6                                                                                 |                                                                                     |                                                                                     |
| Lane Util. Factor       | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 0.97                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                | 0.95                                                                                |
| Frt                     |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 0.993                                                                               |                                                                                     |
| Flt Protected           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 1544                                                                              | 2624                                                                              | 0                                                                                 | 3354                                                                              | 2939                                                                              | 0                                                                                 | 1544                                                                                | 3262                                                                                | 1820                                                                                | 1729                                                                                | 3383                                                                                | 0                                                                                   |
| Flt Permitted           | 0.404                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.075                                                                               |                                                                                     |                                                                                     | 0.370                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 656                                                                               | 2624                                                                              | 0                                                                                 | 3354                                                                              | 2939                                                                              | 0                                                                                 | 122                                                                                 | 3262                                                                                | 1820                                                                                | 673                                                                                 | 3383                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 162                                                                               |                                                                                   |                                                                                   | 213                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 4                                                                                   |
| Link Speed (k/h)        |                                                                                   | 60                                                                                |                                                                                   |                                                                                   | 60                                                                                |                                                                                   |                                                                                     | 80                                                                                  |                                                                                     |                                                                                     |                                                                                     | 80                                                                                  |
| Link Distance (m)       |                                                                                   | 472.7                                                                             |                                                                                   |                                                                                   | 426.7                                                                             |                                                                                   |                                                                                     | 635.3                                                                               |                                                                                     |                                                                                     |                                                                                     | 509.3                                                                               |
| Travel Time (s)         |                                                                                   | 28.4                                                                              |                                                                                   |                                                                                   | 25.6                                                                              |                                                                                   |                                                                                     | 28.6                                                                                |                                                                                     |                                                                                     |                                                                                     | 22.9                                                                                |
| Peak Hour Factor        | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Heavy Vehicles (%)      | 12%                                                                               | 12%                                                                               | 12%                                                                               | 0%                                                                                | 12%                                                                               | 0%                                                                                | 12%                                                                                 | 6%                                                                                  | 0%                                                                                  | 0%                                                                                  | 1%                                                                                  | 12%                                                                                 |
| Adj. Flow (vph)         | 323                                                                               | 0                                                                                 | 239                                                                               | 46                                                                                | 0                                                                                 | 8                                                                                 | 60                                                                                  | 644                                                                                 | 0                                                                                   | 56                                                                                  | 1675                                                                                | 80                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 323                                                                               | 239                                                                               | 0                                                                                 | 46                                                                                | 8                                                                                 | 0                                                                                 | 60                                                                                  | 644                                                                                 | 0                                                                                   | 56                                                                                  | 1755                                                                                | 0                                                                                   |
| Turn Type               | pm+pt                                                                             | NA                                                                                |                                                                                   | Prot                                                                              | NA                                                                                |                                                                                   | pm+pt                                                                               | NA                                                                                  | Perm                                                                                | pm+pt                                                                               | NA                                                                                  |                                                                                     |
| Protected Phases        | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases        | 4                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 2                                                                                   |                                                                                     | 2                                                                                   | 6                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                   | 2                                                                                   | 2                                                                                   | 1                                                                                   | 6                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 10.0                                                                              |                                                                                   | 5.0                                                                               | 10.0                                                                              |                                                                                   | 5.0                                                                                 | 10.0                                                                                | 10.0                                                                                | 5.0                                                                                 | 10.0                                                                                |                                                                                     |
| Minimum Split (s)       | 12.5                                                                              | 43.6                                                                              |                                                                                   | 12.5                                                                              | 43.6                                                                              |                                                                                   | 12.4                                                                                | 39.3                                                                                | 39.3                                                                                | 12.4                                                                                | 39.3                                                                                |                                                                                     |
| Total Split (s)         | 13.0                                                                              | 44.0                                                                              |                                                                                   | 13.0                                                                              | 44.0                                                                              |                                                                                   | 13.0                                                                                | 60.0                                                                                | 60.0                                                                                | 13.0                                                                                | 60.0                                                                                |                                                                                     |
| Total Split (%)         | 10.0%                                                                             | 33.8%                                                                             |                                                                                   | 10.0%                                                                             | 33.8%                                                                             |                                                                                   | 10.0%                                                                               | 46.2%                                                                               | 46.2%                                                                               | 10.0%                                                                               | 46.2%                                                                               |                                                                                     |
| Maximum Green (s)       | 5.5                                                                               | 36.5                                                                              |                                                                                   | 5.5                                                                               | 36.5                                                                              |                                                                                   | 5.6                                                                                 | 52.6                                                                                | 52.6                                                                                | 5.6                                                                                 | 52.6                                                                                |                                                                                     |
| Yellow Time (s)         | 4.1                                                                               | 4.1                                                                               |                                                                                   | 4.1                                                                               | 4.1                                                                               |                                                                                   | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 |                                                                                     |
| All-Red Time (s)        | 3.4                                                                               | 3.4                                                                               |                                                                                   | 3.4                                                                               | 3.4                                                                               |                                                                                   | 2.4                                                                                 | 2.4                                                                                 | 2.4                                                                                 | 2.4                                                                                 | 2.4                                                                                 |                                                                                     |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     | 7.5                                                                               | 7.5                                                                               |                                                                                   | 7.5                                                                               | 7.5                                                                               |                                                                                   | 7.4                                                                                 | 7.4                                                                                 | 7.4                                                                                 | 7.4                                                                                 | 7.4                                                                                 |                                                                                     |
| Lead/Lag                | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                                | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lag                                                                                 |                                                                                     |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |                                                                                     |
| Recall Mode             | None                                                                              | None                                                                              |                                                                                   | None                                                                              | None                                                                              |                                                                                   | None                                                                                | Min                                                                                 | Min                                                                                 | None                                                                                | Min                                                                                 |                                                                                     |
| Walk Time (s)           |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                     | 7.0                                                                                 | 7.0                                                                                 |                                                                                     | 7.0                                                                                 |                                                                                     |
| Flash Dont Walk (s)     |                                                                                   | 29.1                                                                              |                                                                                   |                                                                                   | 29.1                                                                              |                                                                                   |                                                                                     | 24.9                                                                                | 24.9                                                                                |                                                                                     | 24.9                                                                                |                                                                                     |
| Pedestrian Calls (#/hr) |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |                                                                                     |
| Act Effect Green (s)    | 19.3                                                                              | 10.8                                                                              |                                                                                   | 5.6                                                                               | 10.7                                                                              |                                                                                   | 57.6                                                                                | 53.4                                                                                |                                                                                     | 57.6                                                                                | 53.4                                                                                |                                                                                     |
| Actuated g/C Ratio      | 0.19                                                                              | 0.11                                                                              |                                                                                   | 0.06                                                                              | 0.11                                                                              |                                                                                   | 0.58                                                                                | 0.54                                                                                |                                                                                     | 0.58                                                                                | 0.54                                                                                |                                                                                     |
| v/c Ratio               | 1.16                                                                              | 0.56                                                                              |                                                                                   | 0.24                                                                              | 0.02                                                                              |                                                                                   | 0.39                                                                                | 0.37                                                                                |                                                                                     | 0.12                                                                                | 0.96                                                                                |                                                                                     |
| Control Delay           | 141.3                                                                             | 21.0                                                                              |                                                                                   | 51.2                                                                              | 0.0                                                                               |                                                                                   | 18.0                                                                                | 15.5                                                                                |                                                                                     | 8.6                                                                                 | 38.6                                                                                |                                                                                     |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |

4: Limebank Road & Realigned Leitrim Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
PM Peak Hour

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Total Delay            | 141.3                                                                             | 21.0                                                                              |                                                                                   | 51.2                                                                              | 0.0                                                                               |                                                                                   | 18.0                                                                                | 15.5                                                                                |                                                                                     | 8.6                                                                                 | 38.6                                                                                |                                                                                     |
| LOS                    | F                                                                                 | C                                                                                 |                                                                                   | D                                                                                 | A                                                                                 |                                                                                   | B                                                                                   | B                                                                                   |                                                                                     | A                                                                                   | D                                                                                   |                                                                                     |
| Approach Delay         |                                                                                   | 90.2                                                                              |                                                                                   |                                                                                   | 43.6                                                                              |                                                                                   |                                                                                     | 15.7                                                                                |                                                                                     |                                                                                     | 37.7                                                                                |                                                                                     |
| Approach LOS           |                                                                                   | F                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Queue Length 50th (m)  | 64.2                                                                              | 7.7                                                                               |                                                                                   | 4.6                                                                               | 0.0                                                                               |                                                                                   | 4.2                                                                                 | 40.0                                                                                |                                                                                     | 3.9                                                                                 | ~189.7                                                                              |                                                                                     |
| Queue Length 95th (m)  | #158.6                                                                            | 19.6                                                                              |                                                                                   | 10.6                                                                              | 0.0                                                                               |                                                                                   | 11.4                                                                                | 56.3                                                                                |                                                                                     | 9.1                                                                                 | #252.8                                                                              |                                                                                     |
| Internal Link Dist (m) |                                                                                   | 448.7                                                                             |                                                                                   |                                                                                   | 402.7                                                                             |                                                                                   |                                                                                     | 611.3                                                                               |                                                                                     |                                                                                     | 485.3                                                                               |                                                                                     |
| Turn Bay Length (m)    | 90.0                                                                              |                                                                                   |                                                                                   | 125.0                                                                             |                                                                                   |                                                                                   | 90.0                                                                                |                                                                                     |                                                                                     | 90.0                                                                                |                                                                                     |                                                                                     |
| Base Capacity (vph)    | 278                                                                               | 1082                                                                              |                                                                                   | 189                                                                               | 1232                                                                              |                                                                                   | 152                                                                                 | 1757                                                                                |                                                                                     | 452                                                                                 | 1825                                                                                |                                                                                     |
| Starvation Cap Reductn | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn    | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio      | 1.16                                                                              | 0.22                                                                              |                                                                                   | 0.24                                                                              | 0.01                                                                              |                                                                                   | 0.39                                                                                | 0.37                                                                                |                                                                                     | 0.12                                                                                | 0.96                                                                                |                                                                                     |

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 99

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.16

Intersection Signal Delay: 42.3

Intersection LOS: D

Intersection Capacity Utilization 90.6%

ICU Level of Service E

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 4: Limebank Road & Realigned Leitrim Road

|                                                                                     |                                                                                     |                                                                                     |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |  |
| Ø1                                                                                  | Ø2                                                                                  | Ø3                                                                                  | Ø4                                                                                    |
| 13 s                                                                                | 60 s                                                                                | 13 s                                                                                | 44 s                                                                                  |
|  |  |  |  |
| Ø5                                                                                  | Ø6                                                                                  | Ø7                                                                                  | Ø8                                                                                    |
| 13 s                                                                                | 60 s                                                                                | 13 s                                                                                | 44 s                                                                                  |

Future (2031) Total Traffic (Dual EBL)

4: Limebank Road & Realigned Leitrim Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
AM Peak Hour (Dual EBL)

|                         |                                                                                    |                                                                                    |  |                                                                                    |                                                                                    |  |   |                                                                                      |  |  |                                                                                      |  |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                                                                                                                 | EBT                                                                                                                                                                 | EBR                                                                               | WBL                                                                                                                                                                 | WBT                                                                                                                                                                 | WBR                                                                               | NBL                                                                                 | NBT                                                                                                                                                                     | NBR                                                                                 | SBL                                                                                 | SBT                                                                                                                                                                     | SBR                                                                                 |
| Lane Configurations     |   |   |                                                                                   |   |   |                                                                                   |  |   |  |  |   |  |
| Traffic Volume (vph)    | 61                                                                                                                                                                  | 0                                                                                                                                                                   | 45                                                                                | 15                                                                                                                                                                  | 0                                                                                                                                                                   | 5                                                                                 | 277                                                                                 | 1836                                                                                                                                                                    | 0                                                                                   | 113                                                                                 | 534                                                                                                                                                                     | 373                                                                                 |
| Future Volume (vph)     | 61                                                                                                                                                                  | 0                                                                                                                                                                   | 45                                                                                | 15                                                                                                                                                                  | 0                                                                                                                                                                   | 5                                                                                 | 277                                                                                 | 1836                                                                                                                                                                    | 0                                                                                   | 113                                                                                 | 534                                                                                                                                                                     | 373                                                                                 |
| Ideal Flow (vphpl)      | 1800                                                                                                                                                                | 1800                                                                                                                                                                | 1800                                                                              | 1800                                                                                                                                                                | 1800                                                                                                                                                                | 1800                                                                              | 1800                                                                                | 1800                                                                                                                                                                    | 1800                                                                                | 1800                                                                                | 1800                                                                                                                                                                    | 1800                                                                                |
| Storage Length (m)      | 90.0                                                                                                                                                                |                                                                                                                                                                     | 0.0                                                                               | 125.0                                                                                                                                                               |                                                                                                                                                                     | 0.0                                                                               | 90.0                                                                                |                                                                                                                                                                         | 160.0                                                                               | 90.0                                                                                |                                                                                                                                                                         | 0.0                                                                                 |
| Storage Lanes           | 2                                                                                                                                                                   |                                                                                                                                                                     | 0                                                                                 | 2                                                                                                                                                                   |                                                                                                                                                                     | 0                                                                                 | 1                                                                                   |                                                                                                                                                                         | 1                                                                                   | 1                                                                                   |                                                                                                                                                                         | 0                                                                                   |
| Taper Length (m)        | 7.6                                                                                                                                                                 |                                                                                                                                                                     |                                                                                   | 2.5                                                                                                                                                                 |                                                                                                                                                                     |                                                                                   | 7.6                                                                                 |                                                                                                                                                                         |                                                                                     | 7.6                                                                                 |                                                                                                                                                                         |                                                                                     |
| Lane Util. Factor       | 0.97                                                                                                                                                                | 0.95                                                                                                                                                                | 0.95                                                                              | 0.97                                                                                                                                                                | 0.95                                                                                                                                                                | 0.95                                                                              | 1.00                                                                                | 0.95                                                                                                                                                                    | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                                                                                                    | 0.95                                                                                |
| Frt                     |                                                                                                                                                                     | 0.850                                                                                                                                                               |                                                                                   |                                                                                                                                                                     | 0.850                                                                                                                                                               |                                                                                   |                                                                                     |                                                                                                                                                                         |                                                                                     |                                                                                     | 0.938                                                                                                                                                                   |                                                                                     |
| Flt Protected           | 0.950                                                                                                                                                               |                                                                                                                                                                     |                                                                                   | 0.950                                                                                                                                                               |                                                                                                                                                                     |                                                                                   | 0.950                                                                               |                                                                                                                                                                         |                                                                                     | 0.950                                                                               |                                                                                                                                                                         |                                                                                     |
| Satd. Flow (prot)       | 2995                                                                                                                                                                | 2624                                                                                                                                                                | 0                                                                                 | 3354                                                                                                                                                                | 2939                                                                                                                                                                | 0                                                                                 | 1544                                                                                | 3357                                                                                                                                                                    | 1820                                                                                | 1729                                                                                | 2942                                                                                                                                                                    | 0                                                                                   |
| Flt Permitted           | 0.950                                                                                                                                                               |                                                                                                                                                                     |                                                                                   | 0.950                                                                                                                                                               |                                                                                                                                                                     |                                                                                   | 0.173                                                                               |                                                                                                                                                                         |                                                                                     | 0.099                                                                               |                                                                                                                                                                         |                                                                                     |
| Satd. Flow (perm)       | 2995                                                                                                                                                                | 2624                                                                                                                                                                | 0                                                                                 | 3354                                                                                                                                                                | 2939                                                                                                                                                                | 0                                                                                 | 281                                                                                 | 3357                                                                                                                                                                    | 1820                                                                                | 180                                                                                 | 2942                                                                                                                                                                    | 0                                                                                   |
| Right Turn on Red       |                                                                                                                                                                     |                                                                                                                                                                     | Yes                                                                               |                                                                                                                                                                     |                                                                                                                                                                     | Yes                                                                               |                                                                                     |                                                                                                                                                                         | Yes                                                                                 |                                                                                     |                                                                                                                                                                         | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                                                                                                     | 373                                                                                                                                                                 |                                                                                   |                                                                                                                                                                     | 224                                                                                                                                                                 |                                                                                   |                                                                                     |                                                                                                                                                                         |                                                                                     |                                                                                     | 139                                                                                                                                                                     |                                                                                     |
| Link Speed (k/h)        |                                                                                                                                                                     | 48                                                                                                                                                                  |                                                                                   |                                                                                                                                                                     | 48                                                                                                                                                                  |                                                                                   |                                                                                     | 80                                                                                                                                                                      |                                                                                     |                                                                                     | 80                                                                                                                                                                      |                                                                                     |
| Link Distance (m)       |                                                                                                                                                                     | 472.7                                                                                                                                                               |                                                                                   |                                                                                                                                                                     | 426.7                                                                                                                                                               |                                                                                   |                                                                                     | 635.3                                                                                                                                                                   |                                                                                     |                                                                                     | 509.3                                                                                                                                                                   |                                                                                     |
| Travel Time (s)         |                                                                                                                                                                     | 35.5                                                                                                                                                                |                                                                                   |                                                                                                                                                                     | 32.0                                                                                                                                                                |                                                                                   |                                                                                     | 28.6                                                                                                                                                                    |                                                                                     |                                                                                     | 22.9                                                                                                                                                                    |                                                                                     |
| Peak Hour Factor        | 1.00                                                                                                                                                                | 1.00                                                                                                                                                                | 1.00                                                                              | 1.00                                                                                                                                                                | 1.00                                                                                                                                                                | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                |
| Heavy Vehicles (%)      | 12%                                                                                                                                                                 | 12%                                                                                                                                                                 | 12%                                                                               | 0%                                                                                                                                                                  | 12%                                                                                                                                                                 | 0%                                                                                | 12%                                                                                 | 3%                                                                                                                                                                      | 0%                                                                                  | 0%                                                                                  | 9%                                                                                                                                                                      | 12%                                                                                 |
| Adj. Flow (vph)         | 61                                                                                                                                                                  | 0                                                                                                                                                                   | 45                                                                                | 15                                                                                                                                                                  | 0                                                                                                                                                                   | 5                                                                                 | 277                                                                                 | 1836                                                                                                                                                                    | 0                                                                                   | 113                                                                                 | 534                                                                                                                                                                     | 373                                                                                 |
| Shared Lane Traffic (%) |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                   |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                   |                                                                                     |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Lane Group Flow (vph)   | 61                                                                                                                                                                  | 45                                                                                                                                                                  | 0                                                                                 | 15                                                                                                                                                                  | 5                                                                                                                                                                   | 0                                                                                 | 277                                                                                 | 1836                                                                                                                                                                    | 0                                                                                   | 113                                                                                 | 907                                                                                                                                                                     | 0                                                                                   |
| Turn Type               | Prot                                                                                                                                                                | NA                                                                                                                                                                  |                                                                                   | Prot                                                                                                                                                                | NA                                                                                                                                                                  |                                                                                   | pm+pt                                                                               | NA                                                                                                                                                                      | Perm                                                                                | pm+pt                                                                               | NA                                                                                                                                                                      |                                                                                     |
| Protected Phases        | 7                                                                                                                                                                   | 4                                                                                                                                                                   |                                                                                   | 3                                                                                                                                                                   | 8                                                                                                                                                                   |                                                                                   | 5                                                                                   | 2                                                                                                                                                                       |                                                                                     | 1                                                                                   | 6                                                                                                                                                                       |                                                                                     |
| Permitted Phases        |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                   |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                   | 2                                                                                   |                                                                                                                                                                         | 2                                                                                   | 6                                                                                   |                                                                                                                                                                         |                                                                                     |
| Detector Phase          | 7                                                                                                                                                                   | 4                                                                                                                                                                   |                                                                                   | 3                                                                                                                                                                   | 8                                                                                                                                                                   |                                                                                   | 5                                                                                   | 2                                                                                                                                                                       | 2                                                                                   | 1                                                                                   | 6                                                                                                                                                                       |                                                                                     |
| Switch Phase            |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                   |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                   |                                                                                     |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                                                                                                                 | 10.0                                                                                                                                                                |                                                                                   | 5.0                                                                                                                                                                 | 10.0                                                                                                                                                                |                                                                                   | 5.0                                                                                 | 10.0                                                                                                                                                                    | 10.0                                                                                | 5.0                                                                                 | 10.0                                                                                                                                                                    |                                                                                     |
| Minimum Split (s)       | 12.5                                                                                                                                                                | 43.6                                                                                                                                                                |                                                                                   | 12.5                                                                                                                                                                | 43.6                                                                                                                                                                |                                                                                   | 12.4                                                                                | 39.3                                                                                                                                                                    | 39.3                                                                                | 12.4                                                                                | 39.3                                                                                                                                                                    |                                                                                     |
| Total Split (s)         | 13.0                                                                                                                                                                | 44.0                                                                                                                                                                |                                                                                   | 13.0                                                                                                                                                                | 44.0                                                                                                                                                                |                                                                                   | 27.0                                                                                | 60.0                                                                                                                                                                    | 60.0                                                                                | 13.0                                                                                | 46.0                                                                                                                                                                    |                                                                                     |
| Total Split (%)         | 10.0%                                                                                                                                                               | 33.8%                                                                                                                                                               |                                                                                   | 10.0%                                                                                                                                                               | 33.8%                                                                                                                                                               |                                                                                   | 20.8%                                                                               | 46.2%                                                                                                                                                                   | 46.2%                                                                               | 10.0%                                                                               | 35.4%                                                                                                                                                                   |                                                                                     |
| Maximum Green (s)       | 5.5                                                                                                                                                                 | 36.5                                                                                                                                                                |                                                                                   | 5.5                                                                                                                                                                 | 36.5                                                                                                                                                                |                                                                                   | 19.6                                                                                | 52.6                                                                                                                                                                    | 52.6                                                                                | 5.6                                                                                 | 38.6                                                                                                                                                                    |                                                                                     |
| Yellow Time (s)         | 4.1                                                                                                                                                                 | 4.1                                                                                                                                                                 |                                                                                   | 4.1                                                                                                                                                                 | 4.1                                                                                                                                                                 |                                                                                   | 5.0                                                                                 | 5.0                                                                                                                                                                     | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                                                                                                     |                                                                                     |
| All-Red Time (s)        | 3.4                                                                                                                                                                 | 3.4                                                                                                                                                                 |                                                                                   | 3.4                                                                                                                                                                 | 3.4                                                                                                                                                                 |                                                                                   | 2.4                                                                                 | 2.4                                                                                                                                                                     | 2.4                                                                                 | 2.4                                                                                 | 2.4                                                                                                                                                                     |                                                                                     |
| Lost Time Adjust (s)    | 0.0                                                                                                                                                                 | 0.0                                                                                                                                                                 |                                                                                   | 0.0                                                                                                                                                                 | 0.0                                                                                                                                                                 |                                                                                   | 0.0                                                                                 | 0.0                                                                                                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                                                                                                     |                                                                                     |
| Total Lost Time (s)     | 7.5                                                                                                                                                                 | 7.5                                                                                                                                                                 |                                                                                   | 7.5                                                                                                                                                                 | 7.5                                                                                                                                                                 |                                                                                   | 7.4                                                                                 | 7.4                                                                                                                                                                     | 7.4                                                                                 | 7.4                                                                                 | 7.4                                                                                                                                                                     |                                                                                     |
| Lead/Lag                | Lead                                                                                                                                                                | Lag                                                                                                                                                                 |                                                                                   | Lead                                                                                                                                                                | Lag                                                                                                                                                                 |                                                                                   | Lead                                                                                | Lag                                                                                                                                                                     | Lag                                                                                 | Lead                                                                                | Lag                                                                                                                                                                     |                                                                                     |
| Lead-Lag Optimize?      | Yes                                                                                                                                                                 | Yes                                                                                                                                                                 |                                                                                   | Yes                                                                                                                                                                 | Yes                                                                                                                                                                 |                                                                                   | Yes                                                                                 | Yes                                                                                                                                                                     | Yes                                                                                 | Yes                                                                                 | Yes                                                                                                                                                                     |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                                                                                                                 | 3.0                                                                                                                                                                 |                                                                                   | 3.0                                                                                                                                                                 | 3.0                                                                                                                                                                 |                                                                                   | 3.0                                                                                 | 3.0                                                                                                                                                                     | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                                                                                                     |                                                                                     |
| Recall Mode             | None                                                                                                                                                                | None                                                                                                                                                                |                                                                                   | None                                                                                                                                                                | None                                                                                                                                                                |                                                                                   | None                                                                                | Min                                                                                                                                                                     | Min                                                                                 | None                                                                                | Min                                                                                                                                                                     |                                                                                     |
| Walk Time (s)           |                                                                                                                                                                     | 7.0                                                                                                                                                                 |                                                                                   |                                                                                                                                                                     | 7.0                                                                                                                                                                 |                                                                                   |                                                                                     | 7.0                                                                                                                                                                     | 7.0                                                                                 |                                                                                     | 7.0                                                                                                                                                                     |                                                                                     |
| Flash Dont Walk (s)     |                                                                                                                                                                     | 29.1                                                                                                                                                                |                                                                                   |                                                                                                                                                                     | 29.1                                                                                                                                                                |                                                                                   |                                                                                     | 24.9                                                                                                                                                                    | 24.9                                                                                |                                                                                     | 24.9                                                                                                                                                                    |                                                                                     |
| Pedestrian Calls (#/hr) |                                                                                                                                                                     | 0                                                                                                                                                                   |                                                                                   |                                                                                                                                                                     | 0                                                                                                                                                                   |                                                                                   |                                                                                     | 0                                                                                                                                                                       | 0                                                                                   |                                                                                     | 0                                                                                                                                                                       |                                                                                     |
| Act Effect Green (s)    | 10.5                                                                                                                                                                | 10.2                                                                                                                                                                |                                                                                   | 5.6                                                                                                                                                                 | 10.2                                                                                                                                                                |                                                                                   | 66.7                                                                                | 53.5                                                                                                                                                                    |                                                                                     | 46.1                                                                                | 40.4                                                                                                                                                                    |                                                                                     |
| Actuated g/C Ratio      | 0.11                                                                                                                                                                | 0.11                                                                                                                                                                |                                                                                   | 0.06                                                                                                                                                                | 0.11                                                                                                                                                                |                                                                                   | 0.72                                                                                | 0.58                                                                                                                                                                    |                                                                                     | 0.50                                                                                | 0.44                                                                                                                                                                    |                                                                                     |
| v/c Ratio               | 0.18                                                                                                                                                                | 0.07                                                                                                                                                                |                                                                                   | 0.07                                                                                                                                                                | 0.01                                                                                                                                                                |                                                                                   | 0.60                                                                                | 0.94                                                                                                                                                                    |                                                                                     | 0.61                                                                                | 0.66                                                                                                                                                                    |                                                                                     |
| Control Delay           | 41.1                                                                                                                                                                | 0.2                                                                                                                                                                 |                                                                                   | 46.3                                                                                                                                                                | 0.0                                                                                                                                                                 |                                                                                   | 16.4                                                                                | 32.4                                                                                                                                                                    |                                                                                     | 33.7                                                                                | 22.4                                                                                                                                                                    |                                                                                     |
| Queue Delay             | 0.0                                                                                                                                                                 | 0.0                                                                                                                                                                 |                                                                                   | 0.0                                                                                                                                                                 | 0.0                                                                                                                                                                 |                                                                                   | 0.0                                                                                 | 0.0                                                                                                                                                                     |                                                                                     | 0.0                                                                                 | 0.0                                                                                                                                                                     |                                                                                     |

4: Limebank Road & Realigned Leitrim Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
AM Peak Hour (Dual EBL)

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Total Delay            | 41.1                                                                              | 0.2                                                                               |                                                                                   | 46.3                                                                              | 0.0                                                                               |                                                                                   | 16.4                                                                               | 32.4                                                                                |                                                                                     | 33.7                                                                                | 22.4                                                                                |                                                                                     |
| LOS                    | D                                                                                 | A                                                                                 |                                                                                   | D                                                                                 | A                                                                                 |                                                                                   | B                                                                                  | C                                                                                   |                                                                                     | C                                                                                   | C                                                                                   |                                                                                     |
| Approach Delay         |                                                                                   | 23.7                                                                              |                                                                                   |                                                                                   | 34.7                                                                              |                                                                                   |                                                                                    | 30.3                                                                                |                                                                                     |                                                                                     | 23.7                                                                                |                                                                                     |
| Approach LOS           |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Queue Length 50th (m)  | 5.0                                                                               | 0.0                                                                               |                                                                                   | 1.2                                                                               | 0.0                                                                               |                                                                                   | 13.5                                                                               | 143.9                                                                               |                                                                                     | 4.8                                                                                 | 55.3                                                                                |                                                                                     |
| Queue Length 95th (m)  | 12.8                                                                              | 0.0                                                                               |                                                                                   | 4.8                                                                               | 0.0                                                                               |                                                                                   | 50.4                                                                               | #259.7                                                                              |                                                                                     | #33.4                                                                               | 95.7                                                                                |                                                                                     |
| Internal Link Dist (m) |                                                                                   | 448.7                                                                             |                                                                                   |                                                                                   | 402.7                                                                             |                                                                                   |                                                                                    | 611.3                                                                               |                                                                                     |                                                                                     | 485.3                                                                               |                                                                                     |
| Turn Bay Length (m)    | 90.0                                                                              |                                                                                   |                                                                                   | 125.0                                                                             |                                                                                   |                                                                                   | 90.0                                                                               |                                                                                     |                                                                                     | 90.0                                                                                |                                                                                     |                                                                                     |
| Base Capacity (vph)    | 342                                                                               | 1278                                                                              |                                                                                   | 203                                                                               | 1316                                                                              |                                                                                   | 476                                                                                | 1946                                                                                |                                                                                     | 185                                                                                 | 1367                                                                                |                                                                                     |
| Starvation Cap Reductn | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn    | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio      | 0.18                                                                              | 0.04                                                                              |                                                                                   | 0.07                                                                              | 0.00                                                                              |                                                                                   | 0.58                                                                               | 0.94                                                                                |                                                                                     | 0.61                                                                                | 0.66                                                                                |                                                                                     |

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 92.2

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.94

Intersection Signal Delay: 28.0

Intersection LOS: C

Intersection Capacity Utilization 87.3%

ICU Level of Service E

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 4: Limebank Road & Realigned Leitrim Road

|                                                                                        |                                                                                        |                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 |  Ø3 |  Ø4 |
| 13 s                                                                                   | 60 s                                                                                   | 13 s                                                                                   | 44 s                                                                                     |
|  Ø5 |  Ø6 |  Ø7 |  Ø8 |
| 27 s                                                                                   | 46 s                                                                                   | 13 s                                                                                   | 44 s                                                                                     |

4: Limebank Road & Realigned Leitrim Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
PM Peak Hour (Dual EBL)

|                         |  |  |  |  |  |  |   |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |  |  |                                                                                   |  |  |                                                                                   |  |  |  |  |  |                                                                                     |
| Traffic Volume (vph)    | 323                                                                               | 0                                                                                 | 239                                                                               | 46                                                                                | 0                                                                                 | 8                                                                                 | 60                                                                                  | 644                                                                                 | 0                                                                                   | 56                                                                                  | 1675                                                                                | 80                                                                                  |
| Future Volume (vph)     | 323                                                                               | 0                                                                                 | 239                                                                               | 46                                                                                | 0                                                                                 | 8                                                                                 | 60                                                                                  | 644                                                                                 | 0                                                                                   | 56                                                                                  | 1675                                                                                | 80                                                                                  |
| Ideal Flow (vphpl)      | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                |
| Storage Length (m)      | 90.0                                                                              |                                                                                   | 0.0                                                                               | 125.0                                                                             |                                                                                   | 0.0                                                                               | 90.0                                                                                |                                                                                     | 160.0                                                                               | 90.0                                                                                |                                                                                     | 0.0                                                                                 |
| Storage Lanes           | 2                                                                                 |                                                                                   | 0                                                                                 | 2                                                                                 |                                                                                   | 0                                                                                 | 1                                                                                   |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     | 0                                                                                   |
| Taper Length (m)        | 7.6                                                                               |                                                                                   |                                                                                   | 2.5                                                                               |                                                                                   |                                                                                   | 7.6                                                                                 |                                                                                     |                                                                                     | 7.6                                                                                 |                                                                                     |                                                                                     |
| Lane Util. Factor       | 0.97                                                                              | 0.95                                                                              | 0.95                                                                              | 0.97                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                                | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                | 0.95                                                                                |
| Frt                     |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 0.993                                                                               |                                                                                     |
| Flt Protected           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 2995                                                                              | 2624                                                                              | 0                                                                                 | 3354                                                                              | 2939                                                                              | 0                                                                                 | 1544                                                                                | 3262                                                                                | 1820                                                                                | 1729                                                                                | 3383                                                                                | 0                                                                                   |
| Flt Permitted           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.075                                                                               |                                                                                     |                                                                                     | 0.370                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 2995                                                                              | 2624                                                                              | 0                                                                                 | 3354                                                                              | 2939                                                                              | 0                                                                                 | 122                                                                                 | 3262                                                                                | 1820                                                                                | 673                                                                                 | 3383                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 162                                                                               |                                                                                   |                                                                                   | 206                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 4                                                                                   |
| Link Speed (k/h)        |                                                                                   | 60                                                                                |                                                                                   |                                                                                   | 60                                                                                |                                                                                   |                                                                                     | 80                                                                                  |                                                                                     |                                                                                     |                                                                                     | 80                                                                                  |
| Link Distance (m)       |                                                                                   | 472.7                                                                             |                                                                                   |                                                                                   | 426.7                                                                             |                                                                                   |                                                                                     | 635.3                                                                               |                                                                                     |                                                                                     |                                                                                     | 509.3                                                                               |
| Travel Time (s)         |                                                                                   | 28.4                                                                              |                                                                                   |                                                                                   | 25.6                                                                              |                                                                                   |                                                                                     | 28.6                                                                                |                                                                                     |                                                                                     |                                                                                     | 22.9                                                                                |
| Peak Hour Factor        | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Heavy Vehicles (%)      | 12%                                                                               | 12%                                                                               | 12%                                                                               | 0%                                                                                | 12%                                                                               | 0%                                                                                | 12%                                                                                 | 6%                                                                                  | 0%                                                                                  | 0%                                                                                  | 1%                                                                                  | 12%                                                                                 |
| Adj. Flow (vph)         | 323                                                                               | 0                                                                                 | 239                                                                               | 46                                                                                | 0                                                                                 | 8                                                                                 | 60                                                                                  | 644                                                                                 | 0                                                                                   | 56                                                                                  | 1675                                                                                | 80                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 323                                                                               | 239                                                                               | 0                                                                                 | 46                                                                                | 8                                                                                 | 0                                                                                 | 60                                                                                  | 644                                                                                 | 0                                                                                   | 56                                                                                  | 1755                                                                                | 0                                                                                   |
| Turn Type               | Prot                                                                              | NA                                                                                |                                                                                   | Prot                                                                              | NA                                                                                |                                                                                   | pm+pt                                                                               | NA                                                                                  | Perm                                                                                | pm+pt                                                                               | NA                                                                                  |                                                                                     |
| Protected Phases        | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 2                                                                                   |                                                                                     | 2                                                                                   | 6                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                   | 2                                                                                   | 2                                                                                   | 1                                                                                   | 6                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 10.0                                                                              |                                                                                   | 5.0                                                                               | 10.0                                                                              |                                                                                   | 5.0                                                                                 | 10.0                                                                                | 10.0                                                                                | 5.0                                                                                 | 10.0                                                                                |                                                                                     |
| Minimum Split (s)       | 12.5                                                                              | 43.6                                                                              |                                                                                   | 12.5                                                                              | 43.6                                                                              |                                                                                   | 12.4                                                                                | 39.3                                                                                | 39.3                                                                                | 12.4                                                                                | 39.3                                                                                |                                                                                     |
| Total Split (s)         | 13.0                                                                              | 44.0                                                                              |                                                                                   | 13.0                                                                              | 44.0                                                                              |                                                                                   | 13.0                                                                                | 60.0                                                                                | 60.0                                                                                | 13.0                                                                                | 60.0                                                                                |                                                                                     |
| Total Split (%)         | 10.0%                                                                             | 33.8%                                                                             |                                                                                   | 10.0%                                                                             | 33.8%                                                                             |                                                                                   | 10.0%                                                                               | 46.2%                                                                               | 46.2%                                                                               | 10.0%                                                                               | 46.2%                                                                               |                                                                                     |
| Maximum Green (s)       | 5.5                                                                               | 36.5                                                                              |                                                                                   | 5.5                                                                               | 36.5                                                                              |                                                                                   | 5.6                                                                                 | 52.6                                                                                | 52.6                                                                                | 5.6                                                                                 | 52.6                                                                                |                                                                                     |
| Yellow Time (s)         | 4.1                                                                               | 4.1                                                                               |                                                                                   | 4.1                                                                               | 4.1                                                                               |                                                                                   | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                 |                                                                                     |
| All-Red Time (s)        | 3.4                                                                               | 3.4                                                                               |                                                                                   | 3.4                                                                               | 3.4                                                                               |                                                                                   | 2.4                                                                                 | 2.4                                                                                 | 2.4                                                                                 | 2.4                                                                                 | 2.4                                                                                 |                                                                                     |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     | 7.5                                                                               | 7.5                                                                               |                                                                                   | 7.5                                                                               | 7.5                                                                               |                                                                                   | 7.4                                                                                 | 7.4                                                                                 | 7.4                                                                                 | 7.4                                                                                 | 7.4                                                                                 |                                                                                     |
| Lead/Lag                | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                                | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lag                                                                                 |                                                                                     |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |                                                                                     |
| Recall Mode             | None                                                                              | None                                                                              |                                                                                   | None                                                                              | None                                                                              |                                                                                   | None                                                                                | Min                                                                                 | Min                                                                                 | None                                                                                | Min                                                                                 |                                                                                     |
| Walk Time (s)           |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                   | 7.0                                                                               |                                                                                   |                                                                                     | 7.0                                                                                 | 7.0                                                                                 |                                                                                     | 7.0                                                                                 |                                                                                     |
| Flash Dont Walk (s)     |                                                                                   | 29.1                                                                              |                                                                                   |                                                                                   | 29.1                                                                              |                                                                                   |                                                                                     | 24.9                                                                                | 24.9                                                                                |                                                                                     | 24.9                                                                                |                                                                                     |
| Pedestrian Calls (#/hr) |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 |                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |                                                                                     |
| Act Effect Green (s)    | 16.8                                                                              | 10.8                                                                              |                                                                                   | 5.6                                                                               | 10.7                                                                              |                                                                                   | 57.6                                                                                | 53.4                                                                                |                                                                                     | 57.6                                                                                | 53.4                                                                                |                                                                                     |
| Actuated g/C Ratio      | 0.17                                                                              | 0.11                                                                              |                                                                                   | 0.06                                                                              | 0.11                                                                              |                                                                                   | 0.58                                                                                | 0.54                                                                                |                                                                                     | 0.58                                                                                | 0.54                                                                                |                                                                                     |
| v/c Ratio               | 0.63                                                                              | 0.56                                                                              |                                                                                   | 0.24                                                                              | 0.02                                                                              |                                                                                   | 0.39                                                                                | 0.37                                                                                |                                                                                     | 0.12                                                                                | 0.96                                                                                |                                                                                     |
| Control Delay           | 46.9                                                                              | 21.0                                                                              |                                                                                   | 51.2                                                                              | 0.0                                                                               |                                                                                   | 18.0                                                                                | 15.5                                                                                |                                                                                     | 8.6                                                                                 | 38.6                                                                                |                                                                                     |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |

4: Limebank Road & Realigned Leitrim Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
PM Peak Hour (Dual EBL)

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Total Delay            | 46.9                                                                              | 21.0                                                                              |                                                                                   | 51.2                                                                              | 0.0                                                                               |                                                                                   | 18.0                                                                                | 15.5                                                                                |                                                                                     | 8.6                                                                                 | 38.6                                                                                |                                                                                     |
| LOS                    | D                                                                                 | C                                                                                 |                                                                                   | D                                                                                 | A                                                                                 |                                                                                   | B                                                                                   | B                                                                                   |                                                                                     | A                                                                                   | D                                                                                   |                                                                                     |
| Approach Delay         |                                                                                   | 35.9                                                                              |                                                                                   |                                                                                   | 43.6                                                                              |                                                                                   |                                                                                     | 15.7                                                                                |                                                                                     |                                                                                     | 37.7                                                                                |                                                                                     |
| Approach LOS           |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                     | B                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Queue Length 50th (m)  | 29.3                                                                              | 7.7                                                                               |                                                                                   | 4.6                                                                               | 0.0                                                                               |                                                                                   | 4.2                                                                                 | 40.0                                                                                |                                                                                     | 3.9                                                                                 | ~189.7                                                                              |                                                                                     |
| Queue Length 95th (m)  | #82.3                                                                             | 19.6                                                                              |                                                                                   | 10.6                                                                              | 0.0                                                                               |                                                                                   | 11.4                                                                                | 56.3                                                                                |                                                                                     | 9.1                                                                                 | #252.8                                                                              |                                                                                     |
| Internal Link Dist (m) |                                                                                   | 448.7                                                                             |                                                                                   |                                                                                   | 402.7                                                                             |                                                                                   |                                                                                     | 611.3                                                                               |                                                                                     |                                                                                     | 485.3                                                                               |                                                                                     |
| Turn Bay Length (m)    | 90.0                                                                              |                                                                                   |                                                                                   | 125.0                                                                             |                                                                                   |                                                                                   | 90.0                                                                                |                                                                                     |                                                                                     | 90.0                                                                                |                                                                                     |                                                                                     |
| Base Capacity (vph)    | 509                                                                               | 1082                                                                              |                                                                                   | 189                                                                               | 1228                                                                              |                                                                                   | 152                                                                                 | 1757                                                                                |                                                                                     | 452                                                                                 | 1825                                                                                |                                                                                     |
| Starvation Cap Reductn | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn    | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio      | 0.63                                                                              | 0.22                                                                              |                                                                                   | 0.24                                                                              | 0.01                                                                              |                                                                                   | 0.39                                                                                | 0.37                                                                                |                                                                                     | 0.12                                                                                | 0.96                                                                                |                                                                                     |

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 99

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 32.5

Intersection LOS: C

Intersection Capacity Utilization 85.8%

ICU Level of Service E

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 4: Limebank Road & Realigned Leitrim Road

|                                                                                     |                                                                                     |                                                                                     |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |  |
| Ø1                                                                                  | Ø2                                                                                  | Ø3                                                                                  | Ø4                                                                                    |
| 13 s                                                                                | 60 s                                                                                | 13 s                                                                                | 44 s                                                                                  |
|  |  |  |  |
| Ø5                                                                                  | Ø6                                                                                  | Ø7                                                                                  | Ø8                                                                                    |
| 13 s                                                                                | 60 s                                                                                | 13 s                                                                                | 44 s                                                                                  |

Future (2031) Total Traffic (Coordinated)

1: Limebank Road & Leitrim Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
AM Peak Hour (Coordinated)

|                         |  |  |  |  |  |  |   |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)    | 3                                                                                 | 240                                                                               | 28                                                                                | 348                                                                               | 124                                                                               | 203                                                                               | 6                                                                                   | 1317                                                                                | 619                                                                                 | 199                                                                                 | 600                                                                                 | 7                                                                                   |
| Future Volume (vph)     | 3                                                                                 | 240                                                                               | 28                                                                                | 348                                                                               | 124                                                                               | 203                                                                               | 6                                                                                   | 1317                                                                                | 619                                                                                 | 199                                                                                 | 600                                                                                 | 7                                                                                   |
| Ideal Flow (vphpl)      | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                |
| Storage Length (m)      | 130.0                                                                             |                                                                                   | 130.0                                                                             | 120.0                                                                             |                                                                                   | 150.0                                                                             | 195.0                                                                               |                                                                                     | 180.0                                                                               | 210.0                                                                               |                                                                                     | 185.0                                                                               |
| Storage Lanes           | 2                                                                                 |                                                                                   | 1                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 2                                                                                   |                                                                                     | 1                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (m)        | 7.6                                                                               |                                                                                   |                                                                                   | 7.6                                                                               |                                                                                   |                                                                                   | 7.6                                                                                 |                                                                                     |                                                                                     | 7.6                                                                                 |                                                                                     |                                                                                     |
| Lane Util. Factor       | 0.97                                                                              | 1.00                                                                              | 1.00                                                                              | 0.97                                                                              | 1.00                                                                              | 1.00                                                                              | 0.97                                                                                | 0.95                                                                                | 1.00                                                                                | 0.97                                                                                | 0.95                                                                                | 1.00                                                                                |
| Ped Bike Factor         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     | 0.99                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |
| Frt                     |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 3354                                                                              | 1820                                                                              | 1031                                                                              | 2942                                                                              | 1733                                                                              | 1488                                                                              | 3354                                                                                | 3357                                                                                | 1419                                                                                | 3077                                                                                | 3357                                                                                | 1547                                                                                |
| Flt Permitted           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 3354                                                                              | 1820                                                                              | 1031                                                                              | 2942                                                                              | 1733                                                                              | 1488                                                                              | 3354                                                                                | 3357                                                                                | 1400                                                                                | 3076                                                                                | 3357                                                                                | 1547                                                                                |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   |                                                                                   | 188                                                                               |                                                                                   |                                                                                   | 185                                                                               |                                                                                     |                                                                                     | 413                                                                                 |                                                                                     |                                                                                     | 190                                                                                 |
| Link Speed (k/h)        |                                                                                   | 80                                                                                |                                                                                   |                                                                                   | 80                                                                                |                                                                                   |                                                                                     | 80                                                                                  |                                                                                     |                                                                                     | 80                                                                                  |                                                                                     |
| Link Distance (m)       |                                                                                   | 395.5                                                                             |                                                                                   |                                                                                   | 472.5                                                                             |                                                                                   |                                                                                     | 509.3                                                                               |                                                                                     |                                                                                     | 517.2                                                                               |                                                                                     |
| Travel Time (s)         |                                                                                   | 17.8                                                                              |                                                                                   |                                                                                   | 21.3                                                                              |                                                                                   |                                                                                     | 22.9                                                                                |                                                                                     |                                                                                     | 23.3                                                                                |                                                                                     |
| Confl. Peds. (#/hr)     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     |                                                                                     |
| Peak Hour Factor        | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Heavy Vehicles (%)      | 0%                                                                                | 0%                                                                                | 50%                                                                               | 14%                                                                               | 5%                                                                                | 4%                                                                                | 0%                                                                                  | 3%                                                                                  | 9%                                                                                  | 9%                                                                                  | 3%                                                                                  | 0%                                                                                  |
| Adj. Flow (vph)         | 3                                                                                 | 240                                                                               | 28                                                                                | 348                                                                               | 124                                                                               | 203                                                                               | 6                                                                                   | 1317                                                                                | 619                                                                                 | 199                                                                                 | 600                                                                                 | 7                                                                                   |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 3                                                                                 | 240                                                                               | 28                                                                                | 348                                                                               | 124                                                                               | 203                                                                               | 6                                                                                   | 1317                                                                                | 619                                                                                 | 199                                                                                 | 600                                                                                 | 7                                                                                   |
| Turn Type               | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                                | NA                                                                                  | Perm                                                                                | Prot                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases        | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                     |                                                                                     | 2                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |
| Detector Phase          | 7                                                                                 | 4                                                                                 | 4                                                                                 | 3                                                                                 | 8                                                                                 | 8                                                                                 | 5                                                                                   | 2                                                                                   | 2                                                                                   | 1                                                                                   | 6                                                                                   | 6                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 10.0                                                                              | 10.0                                                                              | 5.0                                                                               | 10.0                                                                              | 10.0                                                                              | 5.0                                                                                 | 21.0                                                                                | 21.0                                                                                | 5.0                                                                                 | 21.0                                                                                | 21.0                                                                                |
| Minimum Split (s)       | 11.1                                                                              | 30.8                                                                              | 30.8                                                                              | 11.1                                                                              | 30.8                                                                              | 30.8                                                                              | 11.6                                                                                | 27.6                                                                                | 27.6                                                                                | 11.6                                                                                | 27.6                                                                                | 27.6                                                                                |
| Total Split (s)         | 12.0                                                                              | 31.0                                                                              | 31.0                                                                              | 23.0                                                                              | 42.0                                                                              | 42.0                                                                              | 12.0                                                                                | 63.0                                                                                | 63.0                                                                                | 13.0                                                                                | 64.0                                                                                | 64.0                                                                                |
| Total Split (%)         | 9.2%                                                                              | 23.8%                                                                             | 23.8%                                                                             | 17.7%                                                                             | 32.3%                                                                             | 32.3%                                                                             | 9.2%                                                                                | 48.5%                                                                               | 48.5%                                                                               | 10.0%                                                                               | 49.2%                                                                               | 49.2%                                                                               |
| Maximum Green (s)       | 5.9                                                                               | 24.2                                                                              | 24.2                                                                              | 16.9                                                                              | 35.2                                                                              | 35.2                                                                              | 5.4                                                                                 | 56.4                                                                                | 56.4                                                                                | 6.4                                                                                 | 57.4                                                                                | 57.4                                                                                |
| Yellow Time (s)         | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 |
| All-Red Time (s)        | 1.9                                                                               | 2.6                                                                               | 2.6                                                                               | 1.9                                                                               | 2.6                                                                               | 2.6                                                                               | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     | 6.1                                                                               | 6.8                                                                               | 6.8                                                                               | 6.1                                                                               | 6.8                                                                               | 6.8                                                                               | 6.6                                                                                 | 6.6                                                                                 | 6.6                                                                                 | 6.6                                                                                 | 6.6                                                                                 | 6.6                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                                | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                                | C-Max                                                                               | C-Max                                                                               | None                                                                                | C-Max                                                                               | C-Max                                                                               |
| Walk Time (s)           |                                                                                   | 7.0                                                                               | 7.0                                                                               |                                                                                   | 7.0                                                                               | 7.0                                                                               |                                                                                     | 7.0                                                                                 | 7.0                                                                                 |                                                                                     | 7.0                                                                                 | 7.0                                                                                 |
| Flash Dont Walk (s)     |                                                                                   | 17.0                                                                              | 17.0                                                                              |                                                                                   | 17.0                                                                              | 17.0                                                                              |                                                                                     | 14.0                                                                                | 14.0                                                                                |                                                                                     | 14.0                                                                                | 14.0                                                                                |
| Pedestrian Calls (#/hr) |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Act Effect Green (s)    | 5.7                                                                               | 21.1                                                                              | 21.1                                                                              | 16.9                                                                              | 41.6                                                                              | 41.6                                                                              | 5.5                                                                                 | 56.4                                                                                | 56.4                                                                                | 9.6                                                                                 | 70.2                                                                                | 70.2                                                                                |
| Actuated g/C Ratio      | 0.04                                                                              | 0.16                                                                              | 0.16                                                                              | 0.13                                                                              | 0.32                                                                              | 0.32                                                                              | 0.04                                                                                | 0.43                                                                                | 0.43                                                                                | 0.07                                                                                | 0.54                                                                                | 0.54                                                                                |
| v/c Ratio               | 0.02                                                                              | 0.82                                                                              | 0.09                                                                              | 0.91                                                                              | 0.22                                                                              | 0.34                                                                              | 0.04                                                                                | 0.90                                                                                | 0.74                                                                                | 0.88                                                                                | 0.33                                                                                | 0.01                                                                                |

1: Limebank Road & Leitrim Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
AM Peak Hour (Coordinated)

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Control Delay          | 59.7                                                                              | 73.8                                                                              | 0.5                                                                               | 84.6                                                                              | 33.9                                                                              | 7.8                                                                               | 86.5                                                                               | 24.2                                                                                | 8.2                                                                                 | 94.5                                                                                | 18.6                                                                                | 0.0                                                                                 |
| Queue Delay            | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay            | 59.7                                                                              | 73.8                                                                              | 0.5                                                                               | 84.6                                                                              | 33.9                                                                              | 7.8                                                                               | 86.5                                                                               | 24.2                                                                                | 8.2                                                                                 | 94.5                                                                                | 18.6                                                                                | 0.0                                                                                 |
| LOS                    | E                                                                                 | E                                                                                 | A                                                                                 | F                                                                                 | C                                                                                 | A                                                                                 | F                                                                                  | C                                                                                   | A                                                                                   | F                                                                                   | B                                                                                   | A                                                                                   |
| Approach Delay         | 66.1                                                                              |                                                                                   |                                                                                   | 52.2                                                                              |                                                                                   |                                                                                   | 19.3                                                                               |                                                                                     |                                                                                     | 37.1                                                                                |                                                                                     |                                                                                     |
| Approach LOS           | E                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | B                                                                                  |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |
| Queue Length 50th (m)  | 0.4                                                                               | 59.3                                                                              | 0.0                                                                               | 45.9                                                                              | 22.2                                                                              | 3.0                                                                               | 0.6                                                                                | 138.3                                                                               | 65.6                                                                                | ~27.9                                                                               | 42.8                                                                                | 0.0                                                                                 |
| Queue Length 95th (m)  | 2.0                                                                               | 87.2                                                                              | 0.0                                                                               | #73.1                                                                             | 41.9                                                                              | 22.3                                                                              | m1.2                                                                               | #148.3                                                                              | m19.3                                                                               | #58.5                                                                               | 69.1                                                                                | 0.0                                                                                 |
| Internal Link Dist (m) | 371.5                                                                             |                                                                                   |                                                                                   | 448.5                                                                             |                                                                                   |                                                                                   | 485.3                                                                              |                                                                                     |                                                                                     | 493.2                                                                               |                                                                                     |                                                                                     |
| Turn Bay Length (m)    | 130.0                                                                             | 130.0                                                                             |                                                                                   | 120.0                                                                             | 150.0                                                                             |                                                                                   | 195.0                                                                              | 180.0                                                                               |                                                                                     | 210.0                                                                               | 185.0                                                                               |                                                                                     |
| Base Capacity (vph)    | 152                                                                               | 338                                                                               | 344                                                                               | 382                                                                               | 555                                                                               | 602                                                                               | 141                                                                                | 1456                                                                                | 841                                                                                 | 226                                                                                 | 1812                                                                                | 922                                                                                 |
| Starvation Cap Reductn | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio      | 0.02                                                                              | 0.71                                                                              | 0.08                                                                              | 0.91                                                                              | 0.22                                                                              | 0.34                                                                              | 0.04                                                                               | 0.90                                                                                | 0.74                                                                                | 0.88                                                                                | 0.33                                                                                | 0.01                                                                                |

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 18 (14%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 32.6

Intersection LOS: C

Intersection Capacity Utilization 92.1%

ICU Level of Service F

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Limebank Road & Leitrim Road

|                                                                                        |                                                                                            |                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 (R) |  Ø3 |  Ø4 |
| 13 s                                                                                   | 63 s                                                                                       | 23 s                                                                                   | 31 s                                                                                     |
|  Ø5 |  Ø6 (R) |  Ø7 |  Ø8 |
| 12 s                                                                                   | 64 s                                                                                       | 12 s                                                                                   | 42 s                                                                                     |

2: Limebank Road & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
AM Peak Hour (Coordinated)

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBU                                                                                | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 |
| Lane Configurations     |  |  |                                                                                   |  |  |  |                                                                                    |  |  |  |  |  |
| Traffic Volume (vph)    | 542                                                                               | 171                                                                               | 33                                                                                | 108                                                                               | 98                                                                                | 192                                                                               | 21                                                                                 | 32                                                                                  | 1100                                                                                | 159                                                                                 | 94                                                                                  | 315                                                                                 |
| Future Volume (vph)     | 542                                                                               | 171                                                                               | 33                                                                                | 108                                                                               | 98                                                                                | 192                                                                               | 21                                                                                 | 32                                                                                  | 1100                                                                                | 159                                                                                 | 94                                                                                  | 315                                                                                 |
| Ideal Flow (vphpl)      | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                               | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                |
| Storage Length (m)      | 100.0                                                                             |                                                                                   | 0.0                                                                               | 95.0                                                                              |                                                                                   | 60.0                                                                              |                                                                                    | 205.0                                                                               |                                                                                     | 180.0                                                                               | 255.0                                                                               |                                                                                     |
| Storage Lanes           | 2                                                                                 |                                                                                   | 0                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 |                                                                                    | 2                                                                                   |                                                                                     | 1                                                                                   | 2                                                                                   |                                                                                     |
| Taper Length (m)        | 7.6                                                                               |                                                                                   |                                                                                   | 7.6                                                                               |                                                                                   |                                                                                   |                                                                                    | 7.6                                                                                 |                                                                                     |                                                                                     | 7.6                                                                                 |                                                                                     |
| Lane Util. Factor       | 0.97                                                                              | 0.95                                                                              | 0.95                                                                              | 0.97                                                                              | 0.95                                                                              | 1.00                                                                              | 0.95                                                                               | 0.97                                                                                | 0.95                                                                                | 1.00                                                                                | 0.97                                                                                | 0.95                                                                                |
| Ped Bike Factor         | 0.90                                                                              | 1.00                                                                              |                                                                                   | 0.98                                                                              |                                                                                   | 0.92                                                                              |                                                                                    | 0.99                                                                                |                                                                                     | 0.96                                                                                | 0.99                                                                                |                                                                                     |
| Frt                     |                                                                                   | 0.976                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                    |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     |
| Flt Protected           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                    | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |
| Satd. Flow (prot)       | 3321                                                                              | 3290                                                                              | 0                                                                                 | 3022                                                                              | 3357                                                                              | 1419                                                                              | 0                                                                                  | 3256                                                                                | 3390                                                                                | 1419                                                                                | 2968                                                                                | 3144                                                                                |
| Flt Permitted           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                    | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |
| Satd. Flow (perm)       | 2993                                                                              | 3290                                                                              | 0                                                                                 | 2967                                                                              | 3357                                                                              | 1308                                                                              | 0                                                                                  | 3230                                                                                | 3390                                                                                | 1368                                                                                | 2942                                                                                | 3144                                                                                |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Satd. Flow (RTOR)       |                                                                                   | 19                                                                                |                                                                                   |                                                                                   |                                                                                   | 196                                                                               |                                                                                    |                                                                                     |                                                                                     | 194                                                                                 |                                                                                     |                                                                                     |
| Link Speed (k/h)        |                                                                                   | 60                                                                                |                                                                                   |                                                                                   | 60                                                                                |                                                                                   |                                                                                    |                                                                                     | 80                                                                                  |                                                                                     |                                                                                     | 80                                                                                  |
| Link Distance (m)       |                                                                                   | 243.4                                                                             |                                                                                   |                                                                                   | 525.1                                                                             |                                                                                   |                                                                                    |                                                                                     | 473.0                                                                               |                                                                                     |                                                                                     | 635.3                                                                               |
| Travel Time (s)         |                                                                                   | 14.6                                                                              |                                                                                   |                                                                                   | 31.5                                                                              |                                                                                   |                                                                                    |                                                                                     | 21.3                                                                                |                                                                                     |                                                                                     | 28.6                                                                                |
| Confl. Peds. (#/hr)     | 61                                                                                |                                                                                   | 13                                                                                | 13                                                                                |                                                                                   | 61                                                                                |                                                                                    | 11                                                                                  |                                                                                     | 22                                                                                  | 22                                                                                  |                                                                                     |
| Peak Hour Factor        | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Heavy Vehicles (%)      | 1%                                                                                | 2%                                                                                | 3%                                                                                | 11%                                                                               | 3%                                                                                | 9%                                                                                | 0%                                                                                 | 5%                                                                                  | 2%                                                                                  | 9%                                                                                  | 13%                                                                                 | 10%                                                                                 |
| Adj. Flow (vph)         | 542                                                                               | 171                                                                               | 33                                                                                | 108                                                                               | 98                                                                                | 192                                                                               | 21                                                                                 | 32                                                                                  | 1100                                                                                | 159                                                                                 | 94                                                                                  | 315                                                                                 |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 542                                                                               | 204                                                                               | 0                                                                                 | 108                                                                               | 98                                                                                | 192                                                                               | 0                                                                                  | 53                                                                                  | 1100                                                                                | 159                                                                                 | 94                                                                                  | 315                                                                                 |
| Turn Type               | Prot                                                                              | NA                                                                                |                                                                                   | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                               | Prot                                                                                | NA                                                                                  | Perm                                                                                | Prot                                                                                | NA                                                                                  |
| Protected Phases        | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                  | 5                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   | 6                                                                                   |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 8                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 | 8                                                                                 | 5                                                                                  | 5                                                                                   | 2                                                                                   | 2                                                                                   | 1                                                                                   | 6                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 10.0                                                                              |                                                                                   | 5.0                                                                               | 10.0                                                                              | 10.0                                                                              | 5.0                                                                                | 5.0                                                                                 | 15.0                                                                                | 15.0                                                                                | 5.0                                                                                 | 15.0                                                                                |
| Minimum Split (s)       | 11.5                                                                              | 41.5                                                                              |                                                                                   | 11.5                                                                              | 41.5                                                                              | 41.5                                                                              | 11.6                                                                               | 11.6                                                                                | 41.7                                                                                | 41.7                                                                                | 11.6                                                                                | 41.7                                                                                |
| Total Split (s)         | 31.0                                                                              | 54.0                                                                              |                                                                                   | 19.0                                                                              | 42.0                                                                              | 42.0                                                                              | 12.0                                                                               | 12.0                                                                                | 45.0                                                                                | 45.0                                                                                | 12.0                                                                                | 45.0                                                                                |
| Total Split (%)         | 23.8%                                                                             | 41.5%                                                                             |                                                                                   | 14.6%                                                                             | 32.3%                                                                             | 32.3%                                                                             | 9.2%                                                                               | 9.2%                                                                                | 34.6%                                                                               | 34.6%                                                                               | 9.2%                                                                                | 34.6%                                                                               |
| Maximum Green (s)       | 24.5                                                                              | 47.5                                                                              |                                                                                   | 12.5                                                                              | 35.5                                                                              | 35.5                                                                              | 5.4                                                                                | 5.4                                                                                 | 38.3                                                                                | 38.3                                                                                | 5.4                                                                                 | 38.3                                                                                |
| Yellow Time (s)         | 3.7                                                                               | 3.7                                                                               |                                                                                   | 3.7                                                                               | 3.7                                                                               | 3.7                                                                               | 4.6                                                                                | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 |
| All-Red Time (s)        | 2.8                                                                               | 2.8                                                                               |                                                                                   | 2.8                                                                               | 2.8                                                                               | 2.8                                                                               | 2.0                                                                                | 2.0                                                                                 | 2.1                                                                                 | 2.1                                                                                 | 2.0                                                                                 | 2.1                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     | 6.5                                                                               | 6.5                                                                               |                                                                                   | 6.5                                                                               | 6.5                                                                               | 6.5                                                                               |                                                                                    | 6.6                                                                                 | 6.7                                                                                 | 6.7                                                                                 | 6.6                                                                                 | 6.7                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                               | Lead                                                                                | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | Min                                                                               | None                                                                              |                                                                                   | None                                                                              | None                                                                              | None                                                                              | None                                                                               | None                                                                                | C-Max                                                                               | C-Max                                                                               | None                                                                                | C-Max                                                                               |
| Walk Time (s)           |                                                                                   | 10.0                                                                              |                                                                                   |                                                                                   | 10.0                                                                              | 10.0                                                                              |                                                                                    |                                                                                     | 10.0                                                                                | 10.0                                                                                |                                                                                     | 10.0                                                                                |
| Flash Dont Walk (s)     |                                                                                   | 25.0                                                                              |                                                                                   |                                                                                   | 25.0                                                                              | 25.0                                                                              |                                                                                    |                                                                                     | 25.0                                                                                | 25.0                                                                                |                                                                                     | 25.0                                                                                |
| Pedestrian Calls (#/hr) |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Act Effect Green (s)    | 23.8                                                                              | 25.1                                                                              |                                                                                   | 9.9                                                                               | 11.2                                                                              | 11.2                                                                              |                                                                                    | 7.5                                                                                 | 58.9                                                                                | 58.9                                                                                | 9.8                                                                                 | 63.6                                                                                |
| Actuated g/C Ratio      | 0.18                                                                              | 0.19                                                                              |                                                                                   | 0.08                                                                              | 0.09                                                                              | 0.09                                                                              |                                                                                    | 0.06                                                                                | 0.45                                                                                | 0.45                                                                                | 0.08                                                                                | 0.49                                                                                |
| v/c Ratio               | 0.89                                                                              | 0.31                                                                              |                                                                                   | 0.47                                                                              | 0.34                                                                              | 0.66                                                                              |                                                                                    | 0.28                                                                                | 0.72                                                                                | 0.22                                                                                | 0.42                                                                                | 0.20                                                                                |

2: Limebank Road & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
AM Peak Hour (Coordinated)

|                         |       |
|-------------------------|-------|
| Lane Group              | SBR   |
| Lane Configurations     |       |
| Traffic Volume (vph)    | 107   |
| Future Volume (vph)     | 107   |
| Ideal Flow (vphpl)      | 1800  |
| Storage Length (m)      | 230.0 |
| Storage Lanes           | 1     |
| Taper Length (m)        |       |
| Lane Util. Factor       | 1.00  |
| Ped Bike Factor         | 0.98  |
| Frt                     | 0.850 |
| Flt Protected           |       |
| Satd. Flow (prot)       | 1502  |
| Flt Permitted           |       |
| Satd. Flow (perm)       | 1466  |
| Right Turn on Red       | Yes   |
| Satd. Flow (RTOR)       | 194   |
| Link Speed (k/h)        |       |
| Link Distance (m)       |       |
| Travel Time (s)         |       |
| Confl. Peds. (#/hr)     | 11    |
| Peak Hour Factor        | 1.00  |
| Heavy Vehicles (%)      | 3%    |
| Adj. Flow (vph)         | 107   |
| Shared Lane Traffic (%) |       |
| Lane Group Flow (vph)   | 107   |
| Turn Type               | Perm  |
| Protected Phases        |       |
| Permitted Phases        | 6     |
| Detector Phase          | 6     |
| Switch Phase            |       |
| Minimum Initial (s)     | 15.0  |
| Minimum Split (s)       | 41.7  |
| Total Split (s)         | 45.0  |
| Total Split (%)         | 34.6% |
| Maximum Green (s)       | 38.3  |
| Yellow Time (s)         | 4.6   |
| All-Red Time (s)        | 2.1   |
| Lost Time Adjust (s)    | 0.0   |
| Total Lost Time (s)     | 6.7   |
| Lead/Lag                | Lag   |
| Lead-Lag Optimize?      | Yes   |
| Vehicle Extension (s)   | 3.0   |
| Recall Mode             | C-Max |
| Walk Time (s)           | 10.0  |
| Flash Dont Walk (s)     | 25.0  |
| Pedestrian Calls (#/hr) | 0     |
| Act Effct Green (s)     | 63.6  |
| Actuated g/C Ratio      | 0.49  |
| v/c Ratio               | 0.13  |

2: Limebank Road & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
AM Peak Hour (Coordinated)

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBU                                                                                | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 |
| Control Delay          | 69.8                                                                              | 42.0                                                                              |                                                                                   | 63.9                                                                              | 58.7                                                                              | 18.2                                                                              |                                                                                    | 62.0                                                                                | 33.0                                                                                | 2.3                                                                                 | 57.8                                                                                | 20.8                                                                                |
| Queue Delay            | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay            | 69.8                                                                              | 42.0                                                                              |                                                                                   | 63.9                                                                              | 58.7                                                                              | 18.2                                                                              |                                                                                    | 62.0                                                                                | 33.0                                                                                | 2.3                                                                                 | 57.8                                                                                | 20.8                                                                                |
| LOS                    | E                                                                                 | D                                                                                 |                                                                                   | E                                                                                 | E                                                                                 | B                                                                                 |                                                                                    | E                                                                                   | C                                                                                   | A                                                                                   | E                                                                                   | C                                                                                   |
| Approach Delay         |                                                                                   | 62.2                                                                              |                                                                                   |                                                                                   | 40.6                                                                              |                                                                                   |                                                                                    |                                                                                     | 30.4                                                                                |                                                                                     |                                                                                     | 24.2                                                                                |
| Approach LOS           |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |
| Queue Length 50th (m)  | 70.1                                                                              | 21.6                                                                              |                                                                                   | 13.9                                                                              | 12.7                                                                              | 0.0                                                                               |                                                                                    | 6.8                                                                                 | 117.4                                                                               | 0.0                                                                                 | 11.4                                                                                | 36.7                                                                                |
| Queue Length 95th (m)  | #97.9                                                                             | 32.2                                                                              |                                                                                   | 22.9                                                                              | 21.0                                                                              | 21.6                                                                              |                                                                                    | 13.4                                                                                | 159.8                                                                               | 7.5                                                                                 | 21.2                                                                                | 43.3                                                                                |
| Internal Link Dist (m) |                                                                                   | 219.4                                                                             |                                                                                   |                                                                                   | 501.1                                                                             |                                                                                   |                                                                                    |                                                                                     | 449.0                                                                               |                                                                                     |                                                                                     | 611.3                                                                               |
| Turn Bay Length (m)    | 100.0                                                                             |                                                                                   |                                                                                   | 95.0                                                                              |                                                                                   | 60.0                                                                              |                                                                                    | 205.0                                                                               |                                                                                     | 180.0                                                                               | 255.0                                                                               |                                                                                     |
| Base Capacity (vph)    | 625                                                                               | 1214                                                                              |                                                                                   | 290                                                                               | 916                                                                               | 499                                                                               |                                                                                    | 187                                                                                 | 1535                                                                                | 725                                                                                 | 224                                                                                 | 1539                                                                                |
| Starvation Cap Reductn | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn    | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio      | 0.87                                                                              | 0.17                                                                              |                                                                                   | 0.37                                                                              | 0.11                                                                              | 0.38                                                                              |                                                                                    | 0.28                                                                                | 0.72                                                                                | 0.22                                                                                | 0.42                                                                                | 0.20                                                                                |

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 88 (68%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 38.7

Intersection LOS: D

Intersection Capacity Utilization 102.1%

ICU Level of Service G

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2: Limebank Road & Spratt Road

|                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |  |
| Ø1                                                                                  | Ø2 (R)                                                                              |                                                                                     | Ø3                                                                                  | Ø4                                                                                  |
| 12 s                                                                                | 45 s                                                                                |                                                                                     | 19 s                                                                                | 54 s                                                                                |
|  |  |  |  |  |
| Ø5                                                                                  | Ø6 (R)                                                                              |                                                                                     | Ø7                                                                                  | Ø8                                                                                  |
| 12 s                                                                                | 45 s                                                                                |                                                                                     | 31 s                                                                                | 42 s                                                                                |

2: Limebank Road & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
AM Peak Hour (Coordinated)



|                        |       |
|------------------------|-------|
| Lane Group             | SBR   |
| Control Delay          | 4.7   |
| Queue Delay            | 0.0   |
| Total Delay            | 4.7   |
| LOS                    | A     |
| Approach Delay         |       |
| Approach LOS           |       |
| Queue Length 50th (m)  | 3.9   |
| Queue Length 95th (m)  | 10.7  |
| Internal Link Dist (m) |       |
| Turn Bay Length (m)    | 230.0 |
| Base Capacity (vph)    | 816   |
| Starvation Cap Reductn | 0     |
| Spillback Cap Reductn  | 0     |
| Storage Cap Reductn    | 0     |
| Reduced v/c Ratio      | 0.13  |
| Intersection Summary   |       |

3: Urbandale Plaza & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
AM Peak Hour (Coordinated)

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (vph)    | 1                                                                                 | 737                                                                               | 17                                                                                | 21                                                                                | 215                                                                               | 2                                                                                 | 12                                                                                  | 0                                                                                   | 3                                                                                   | 6                                                                                   | 0                                                                                   | 2                                                                                   |
| Future Volume (vph)     | 1                                                                                 | 737                                                                               | 17                                                                                | 21                                                                                | 215                                                                               | 2                                                                                 | 12                                                                                  | 0                                                                                   | 3                                                                                   | 6                                                                                   | 0                                                                                   | 2                                                                                   |
| Ideal Flow (vphpl)      | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                |
| Lane Util. Factor       | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped Bike Factor         |                                                                                   | 1.00                                                                              |                                                                                   | 0.99                                                                              |                                                                                   |                                                                                   | 1.00                                                                                | 0.98                                                                                |                                                                                     |                                                                                     | 0.99                                                                                |                                                                                     |
| Frt                     |                                                                                   | 0.997                                                                             |                                                                                   |                                                                                   | 0.999                                                                             |                                                                                   |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.966                                                                               |                                                                                     |
| Flt Protected           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.964                                                                               |                                                                                     |
| Satd. Flow (prot)       | 1729                                                                              | 3410                                                                              | 0                                                                                 | 1662                                                                              | 3261                                                                              | 0                                                                                 | 1530                                                                                | 1523                                                                                | 0                                                                                   | 0                                                                                   | 1689                                                                                | 0                                                                                   |
| Flt Permitted           | 0.616                                                                             |                                                                                   |                                                                                   | 0.366                                                                             |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 1121                                                                              | 3410                                                                              | 0                                                                                 | 635                                                                               | 3261                                                                              | 0                                                                                 | 1609                                                                                | 1523                                                                                | 0                                                                                   | 0                                                                                   | 1748                                                                                | 0                                                                                   |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   |                                                                                     | 161                                                                                 |                                                                                     |                                                                                     | 41                                                                                  |                                                                                     |
| Link Speed (k/h)        |                                                                                   | 60                                                                                |                                                                                   |                                                                                   | 60                                                                                |                                                                                   |                                                                                     | 50                                                                                  |                                                                                     |                                                                                     | 50                                                                                  |                                                                                     |
| Link Distance (m)       |                                                                                   | 254.5                                                                             |                                                                                   |                                                                                   | 243.4                                                                             |                                                                                   |                                                                                     | 128.6                                                                               |                                                                                     |                                                                                     | 121.2                                                                               |                                                                                     |
| Travel Time (s)         |                                                                                   | 15.3                                                                              |                                                                                   |                                                                                   | 14.6                                                                              |                                                                                   |                                                                                     | 9.3                                                                                 |                                                                                     |                                                                                     | 8.7                                                                                 |                                                                                     |
| Confl. Peds. (#/hr)     |                                                                                   |                                                                                   | 13                                                                                | 13                                                                                |                                                                                   |                                                                                   | 1                                                                                   |                                                                                     | 4                                                                                   | 4                                                                                   |                                                                                     | 1                                                                                   |
| Peak Hour Factor        | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Heavy Vehicles (%)      | 0%                                                                                | 1%                                                                                | 0%                                                                                | 4%                                                                                | 6%                                                                                | 0%                                                                                | 13%                                                                                 | 0%                                                                                  | 0%                                                                                  | 0%                                                                                  | 0%                                                                                  | 0%                                                                                  |
| Adj. Flow (vph)         | 1                                                                                 | 737                                                                               | 17                                                                                | 21                                                                                | 215                                                                               | 2                                                                                 | 12                                                                                  | 0                                                                                   | 3                                                                                   | 6                                                                                   | 0                                                                                   | 2                                                                                   |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 1                                                                                 | 754                                                                               | 0                                                                                 | 21                                                                                | 217                                                                               | 0                                                                                 | 12                                                                                  | 3                                                                                   | 0                                                                                   | 0                                                                                   | 8                                                                                   | 0                                                                                   |
| Turn Type               | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                                | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     |
| Protected Phases        |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |                                                                                     |
| Permitted Phases        | 2                                                                                 |                                                                                   |                                                                                   | 6                                                                                 |                                                                                   |                                                                                   | 8                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 2                                                                                 | 2                                                                                 |                                                                                   | 6                                                                                 | 6                                                                                 |                                                                                   | 8                                                                                   | 8                                                                                   |                                                                                     | 4                                                                                   | 4                                                                                   |                                                                                     |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 10.0                                                                              | 10.0                                                                              |                                                                                   | 10.0                                                                              | 10.0                                                                              |                                                                                   | 5.0                                                                                 | 5.0                                                                                 |                                                                                     | 5.0                                                                                 | 5.0                                                                                 |                                                                                     |
| Minimum Split (s)       | 24.0                                                                              | 24.0                                                                              |                                                                                   | 24.0                                                                              | 24.0                                                                              |                                                                                   | 32.0                                                                                | 32.0                                                                                |                                                                                     | 32.0                                                                                | 32.0                                                                                |                                                                                     |
| Total Split (s)         | 48.0                                                                              | 48.0                                                                              |                                                                                   | 48.0                                                                              | 48.0                                                                              |                                                                                   | 32.0                                                                                | 32.0                                                                                |                                                                                     | 32.0                                                                                | 32.0                                                                                |                                                                                     |
| Total Split (%)         | 60.0%                                                                             | 60.0%                                                                             |                                                                                   | 60.0%                                                                             | 60.0%                                                                             |                                                                                   | 40.0%                                                                               | 40.0%                                                                               |                                                                                     | 40.0%                                                                               | 40.0%                                                                               |                                                                                     |
| Maximum Green (s)       | 42.0                                                                              | 42.0                                                                              |                                                                                   | 42.0                                                                              | 42.0                                                                              |                                                                                   | 26.0                                                                                | 26.0                                                                                |                                                                                     | 26.0                                                                                | 26.0                                                                                |                                                                                     |
| Yellow Time (s)         | 3.7                                                                               | 3.7                                                                               |                                                                                   | 3.7                                                                               | 3.7                                                                               |                                                                                   | 3.3                                                                                 | 3.3                                                                                 |                                                                                     | 3.3                                                                                 | 3.3                                                                                 |                                                                                     |
| All-Red Time (s)        | 2.3                                                                               | 2.3                                                                               |                                                                                   | 2.3                                                                               | 2.3                                                                               |                                                                                   | 2.7                                                                                 | 2.7                                                                                 |                                                                                     | 2.7                                                                                 | 2.7                                                                                 |                                                                                     |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)     | 6.0                                                                               | 6.0                                                                               |                                                                                   | 6.0                                                                               | 6.0                                                                               |                                                                                   | 6.0                                                                                 | 6.0                                                                                 |                                                                                     |                                                                                     | 6.0                                                                                 |                                                                                     |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                                 | 3.0                                                                                 |                                                                                     | 3.0                                                                                 | 3.0                                                                                 |                                                                                     |
| Recall Mode             | C-Max                                                                             | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             |                                                                                   | None                                                                                | None                                                                                |                                                                                     | None                                                                                | None                                                                                |                                                                                     |
| Walk Time (s)           | 7.0                                                                               | 7.0                                                                               |                                                                                   | 7.0                                                                               | 7.0                                                                               |                                                                                   | 7.0                                                                                 | 7.0                                                                                 |                                                                                     | 7.0                                                                                 | 7.0                                                                                 |                                                                                     |
| Flash Dont Walk (s)     | 10.0                                                                              | 10.0                                                                              |                                                                                   | 10.0                                                                              | 10.0                                                                              |                                                                                   | 19.0                                                                                | 19.0                                                                                |                                                                                     | 19.0                                                                                | 19.0                                                                                |                                                                                     |
| Pedestrian Calls (#/hr) | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Act Effect Green (s)    | 76.0                                                                              | 76.0                                                                              |                                                                                   | 76.0                                                                              | 76.0                                                                              |                                                                                   | 6.5                                                                                 | 6.5                                                                                 |                                                                                     |                                                                                     | 6.0                                                                                 |                                                                                     |
| Actuated g/C Ratio      | 0.95                                                                              | 0.95                                                                              |                                                                                   | 0.95                                                                              | 0.95                                                                              |                                                                                   | 0.08                                                                                | 0.08                                                                                |                                                                                     |                                                                                     | 0.08                                                                                |                                                                                     |
| v/c Ratio               | 0.00                                                                              | 0.23                                                                              |                                                                                   | 0.03                                                                              | 0.07                                                                              |                                                                                   | 0.09                                                                                | 0.01                                                                                |                                                                                     |                                                                                     | 0.05                                                                                |                                                                                     |
| Control Delay           | 2.0                                                                               | 1.1                                                                               |                                                                                   | 1.5                                                                               | 0.9                                                                               |                                                                                   | 34.9                                                                                | 0.0                                                                                 |                                                                                     |                                                                                     | 0.5                                                                                 |                                                                                     |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Total Delay             | 2.0                                                                               | 1.1                                                                               |                                                                                   | 1.5                                                                               | 0.9                                                                               |                                                                                   | 34.9                                                                                | 0.0                                                                                 |                                                                                     |                                                                                     | 0.5                                                                                 |                                                                                     |

3: Urbandale Plaza & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
AM Peak Hour (Coordinated)

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| LOS                    | A                                                                                 | A                                                                                 |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   | C                                                                                  | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |
| Approach Delay         |                                                                                   | 1.1                                                                               |                                                                                   |                                                                                   | 1.0                                                                               |                                                                                   |                                                                                    | 27.9                                                                                |                                                                                     |                                                                                     | 0.5                                                                                 |                                                                                     |
| Approach LOS           |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |
| Queue Length 50th (m)  | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                   | 1.7                                                                                | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Queue Length 95th (m)  | 0.3                                                                               | 20.5                                                                              |                                                                                   | 2.2                                                                               | 5.9                                                                               |                                                                                   | 6.4                                                                                | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |                                                                                     |
| Internal Link Dist (m) |                                                                                   | 230.5                                                                             |                                                                                   |                                                                                   | 219.4                                                                             |                                                                                   |                                                                                    | 104.6                                                                               |                                                                                     |                                                                                     | 97.2                                                                                |                                                                                     |
| Turn Bay Length (m)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)    | 1065                                                                              | 3239                                                                              |                                                                                   | 603                                                                               | 3097                                                                              |                                                                                   | 522                                                                                | 603                                                                                 |                                                                                     |                                                                                     | 595                                                                                 |                                                                                     |
| Starvation Cap Reductn | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Storage Cap Reductn    | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio      | 0.00                                                                              | 0.23                                                                              |                                                                                   | 0.03                                                                              | 0.07                                                                              |                                                                                   | 0.02                                                                               | 0.00                                                                                |                                                                                     |                                                                                     | 0.01                                                                                |                                                                                     |

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.23

Intersection Signal Delay: 1.5

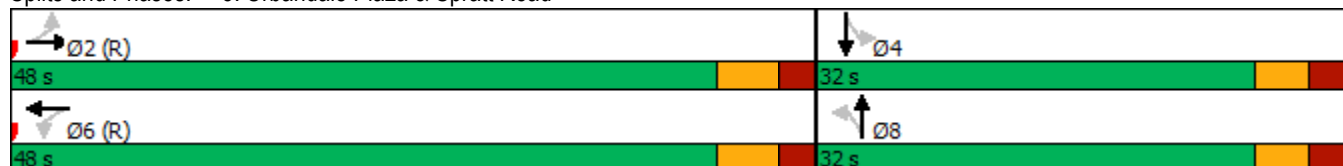
Intersection LOS: A

Intersection Capacity Utilization 38.5%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 3: Urbandale Plaza & Spratt Road



4: Limebank Road & Realigned Leitrim Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
AM Peak Hour (Coordinated)

|                         |                                                                                    |                                                                                    |  |                                                                                    |                                                                                    |  |  |                                                                                      |  |  |                                                                                      |  |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                                                                                                                 | EBT                                                                                                                                                                 | EBR                                                                               | WBL                                                                                                                                                                 | WBT                                                                                                                                                                 | WBR                                                                               | NBL                                                                                | NBT                                                                                                                                                                     | NBR                                                                                 | SBL                                                                                 | SBT                                                                                                                                                                     | SBR                                                                                 |
| Lane Configurations     |   |   |                                                                                   |   |   |                                                                                   |  |   |  |  |   |  |
| Traffic Volume (vph)    | 61                                                                                                                                                                  | 0                                                                                                                                                                   | 45                                                                                | 15                                                                                                                                                                  | 0                                                                                                                                                                   | 5                                                                                 | 277                                                                                | 1836                                                                                                                                                                    | 0                                                                                   | 113                                                                                 | 534                                                                                                                                                                     | 373                                                                                 |
| Future Volume (vph)     | 61                                                                                                                                                                  | 0                                                                                                                                                                   | 45                                                                                | 15                                                                                                                                                                  | 0                                                                                                                                                                   | 5                                                                                 | 277                                                                                | 1836                                                                                                                                                                    | 0                                                                                   | 113                                                                                 | 534                                                                                                                                                                     | 373                                                                                 |
| Ideal Flow (vphpl)      | 1800                                                                                                                                                                | 1800                                                                                                                                                                | 1800                                                                              | 1800                                                                                                                                                                | 1800                                                                                                                                                                | 1800                                                                              | 1800                                                                               | 1800                                                                                                                                                                    | 1800                                                                                | 1800                                                                                | 1800                                                                                                                                                                    | 1800                                                                                |
| Storage Length (m)      | 90.0                                                                                                                                                                |                                                                                                                                                                     | 0.0                                                                               | 125.0                                                                                                                                                               |                                                                                                                                                                     | 0.0                                                                               | 90.0                                                                               |                                                                                                                                                                         | 160.0                                                                               | 90.0                                                                                |                                                                                                                                                                         | 0.0                                                                                 |
| Storage Lanes           | 2                                                                                                                                                                   |                                                                                                                                                                     | 0                                                                                 | 2                                                                                                                                                                   |                                                                                                                                                                     | 0                                                                                 | 1                                                                                  |                                                                                                                                                                         | 1                                                                                   | 1                                                                                   |                                                                                                                                                                         | 0                                                                                   |
| Taper Length (m)        | 7.6                                                                                                                                                                 |                                                                                                                                                                     |                                                                                   | 2.5                                                                                                                                                                 |                                                                                                                                                                     |                                                                                   | 7.6                                                                                |                                                                                                                                                                         |                                                                                     | 7.6                                                                                 |                                                                                                                                                                         |                                                                                     |
| Lane Util. Factor       | 0.97                                                                                                                                                                | 0.95                                                                                                                                                                | 0.95                                                                              | 0.97                                                                                                                                                                | 0.95                                                                                                                                                                | 0.95                                                                              | 1.00                                                                               | 0.95                                                                                                                                                                    | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                                                                                                    | 0.95                                                                                |
| Frt                     |                                                                                                                                                                     | 0.850                                                                                                                                                               |                                                                                   |                                                                                                                                                                     | 0.850                                                                                                                                                               |                                                                                   |                                                                                    |                                                                                                                                                                         |                                                                                     |                                                                                     | 0.938                                                                                                                                                                   |                                                                                     |
| Flt Protected           | 0.950                                                                                                                                                               |                                                                                                                                                                     |                                                                                   | 0.950                                                                                                                                                               |                                                                                                                                                                     |                                                                                   | 0.950                                                                              |                                                                                                                                                                         |                                                                                     | 0.950                                                                               |                                                                                                                                                                         |                                                                                     |
| Satd. Flow (prot)       | 2995                                                                                                                                                                | 2624                                                                                                                                                                | 0                                                                                 | 3354                                                                                                                                                                | 2939                                                                                                                                                                | 0                                                                                 | 1544                                                                               | 3357                                                                                                                                                                    | 1820                                                                                | 1729                                                                                | 2942                                                                                                                                                                    | 0                                                                                   |
| Flt Permitted           | 0.950                                                                                                                                                               |                                                                                                                                                                     |                                                                                   | 0.950                                                                                                                                                               |                                                                                                                                                                     |                                                                                   | 0.211                                                                              |                                                                                                                                                                         |                                                                                     | 0.062                                                                               |                                                                                                                                                                         |                                                                                     |
| Satd. Flow (perm)       | 2995                                                                                                                                                                | 2624                                                                                                                                                                | 0                                                                                 | 3354                                                                                                                                                                | 2939                                                                                                                                                                | 0                                                                                 | 343                                                                                | 3357                                                                                                                                                                    | 1820                                                                                | 113                                                                                 | 2942                                                                                                                                                                    | 0                                                                                   |
| Right Turn on Red       |                                                                                                                                                                     |                                                                                                                                                                     | Yes                                                                               |                                                                                                                                                                     |                                                                                                                                                                     | Yes                                                                               |                                                                                    |                                                                                                                                                                         | Yes                                                                                 |                                                                                     |                                                                                                                                                                         | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                                                                                                     | 373                                                                                                                                                                 |                                                                                   |                                                                                                                                                                     | 224                                                                                                                                                                 |                                                                                   |                                                                                    |                                                                                                                                                                         |                                                                                     |                                                                                     | 139                                                                                                                                                                     |                                                                                     |
| Link Speed (k/h)        |                                                                                                                                                                     | 48                                                                                                                                                                  |                                                                                   |                                                                                                                                                                     | 48                                                                                                                                                                  |                                                                                   |                                                                                    | 80                                                                                                                                                                      |                                                                                     |                                                                                     | 80                                                                                                                                                                      |                                                                                     |
| Link Distance (m)       |                                                                                                                                                                     | 472.7                                                                                                                                                               |                                                                                   |                                                                                                                                                                     | 426.7                                                                                                                                                               |                                                                                   |                                                                                    | 635.3                                                                                                                                                                   |                                                                                     |                                                                                     | 509.3                                                                                                                                                                   |                                                                                     |
| Travel Time (s)         |                                                                                                                                                                     | 35.5                                                                                                                                                                |                                                                                   |                                                                                                                                                                     | 32.0                                                                                                                                                                |                                                                                   |                                                                                    | 28.6                                                                                                                                                                    |                                                                                     |                                                                                     | 22.9                                                                                                                                                                    |                                                                                     |
| Peak Hour Factor        | 1.00                                                                                                                                                                | 1.00                                                                                                                                                                | 1.00                                                                              | 1.00                                                                                                                                                                | 1.00                                                                                                                                                                | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                                                                                                    | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                |
| Heavy Vehicles (%)      | 12%                                                                                                                                                                 | 12%                                                                                                                                                                 | 12%                                                                               | 0%                                                                                                                                                                  | 12%                                                                                                                                                                 | 0%                                                                                | 12%                                                                                | 3%                                                                                                                                                                      | 0%                                                                                  | 0%                                                                                  | 9%                                                                                                                                                                      | 12%                                                                                 |
| Adj. Flow (vph)         | 61                                                                                                                                                                  | 0                                                                                                                                                                   | 45                                                                                | 15                                                                                                                                                                  | 0                                                                                                                                                                   | 5                                                                                 | 277                                                                                | 1836                                                                                                                                                                    | 0                                                                                   | 113                                                                                 | 534                                                                                                                                                                     | 373                                                                                 |
| Shared Lane Traffic (%) |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                   |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                   |                                                                                    |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Lane Group Flow (vph)   | 61                                                                                                                                                                  | 45                                                                                                                                                                  | 0                                                                                 | 15                                                                                                                                                                  | 5                                                                                                                                                                   | 0                                                                                 | 277                                                                                | 1836                                                                                                                                                                    | 0                                                                                   | 113                                                                                 | 907                                                                                                                                                                     | 0                                                                                   |
| Turn Type               | Prot                                                                                                                                                                | NA                                                                                                                                                                  |                                                                                   | Prot                                                                                                                                                                | NA                                                                                                                                                                  |                                                                                   | pm+pt                                                                              | NA                                                                                                                                                                      | Perm                                                                                | pm+pt                                                                               | NA                                                                                                                                                                      |                                                                                     |
| Protected Phases        | 7                                                                                                                                                                   | 4                                                                                                                                                                   |                                                                                   | 3                                                                                                                                                                   | 8                                                                                                                                                                   |                                                                                   | 5                                                                                  | 2                                                                                                                                                                       |                                                                                     | 1                                                                                   | 6                                                                                                                                                                       |                                                                                     |
| Permitted Phases        |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                   |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                   | 2                                                                                  |                                                                                                                                                                         | 2                                                                                   | 6                                                                                   |                                                                                                                                                                         |                                                                                     |
| Detector Phase          | 7                                                                                                                                                                   | 4                                                                                                                                                                   |                                                                                   | 3                                                                                                                                                                   | 8                                                                                                                                                                   |                                                                                   | 5                                                                                  | 2                                                                                                                                                                       | 2                                                                                   | 1                                                                                   | 6                                                                                                                                                                       |                                                                                     |
| Switch Phase            |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                   |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                   |                                                                                    |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                                                                                                                 | 10.0                                                                                                                                                                |                                                                                   | 5.0                                                                                                                                                                 | 10.0                                                                                                                                                                |                                                                                   | 5.0                                                                                | 10.0                                                                                                                                                                    | 10.0                                                                                | 5.0                                                                                 | 10.0                                                                                                                                                                    |                                                                                     |
| Minimum Split (s)       | 12.5                                                                                                                                                                | 43.6                                                                                                                                                                |                                                                                   | 12.5                                                                                                                                                                | 43.6                                                                                                                                                                |                                                                                   | 12.4                                                                               | 39.3                                                                                                                                                                    | 39.3                                                                                | 12.4                                                                                | 39.3                                                                                                                                                                    |                                                                                     |
| Total Split (s)         | 13.0                                                                                                                                                                | 44.0                                                                                                                                                                |                                                                                   | 13.0                                                                                                                                                                | 44.0                                                                                                                                                                |                                                                                   | 27.0                                                                               | 60.0                                                                                                                                                                    | 60.0                                                                                | 13.0                                                                                | 46.0                                                                                                                                                                    |                                                                                     |
| Total Split (%)         | 10.0%                                                                                                                                                               | 33.8%                                                                                                                                                               |                                                                                   | 10.0%                                                                                                                                                               | 33.8%                                                                                                                                                               |                                                                                   | 20.8%                                                                              | 46.2%                                                                                                                                                                   | 46.2%                                                                               | 10.0%                                                                               | 35.4%                                                                                                                                                                   |                                                                                     |
| Maximum Green (s)       | 5.5                                                                                                                                                                 | 36.5                                                                                                                                                                |                                                                                   | 5.5                                                                                                                                                                 | 36.5                                                                                                                                                                |                                                                                   | 19.6                                                                               | 52.6                                                                                                                                                                    | 52.6                                                                                | 5.6                                                                                 | 38.6                                                                                                                                                                    |                                                                                     |
| Yellow Time (s)         | 4.1                                                                                                                                                                 | 4.1                                                                                                                                                                 |                                                                                   | 4.1                                                                                                                                                                 | 4.1                                                                                                                                                                 |                                                                                   | 5.0                                                                                | 5.0                                                                                                                                                                     | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                                                                                                     |                                                                                     |
| All-Red Time (s)        | 3.4                                                                                                                                                                 | 3.4                                                                                                                                                                 |                                                                                   | 3.4                                                                                                                                                                 | 3.4                                                                                                                                                                 |                                                                                   | 2.4                                                                                | 2.4                                                                                                                                                                     | 2.4                                                                                 | 2.4                                                                                 | 2.4                                                                                                                                                                     |                                                                                     |
| Lost Time Adjust (s)    | 0.0                                                                                                                                                                 | 0.0                                                                                                                                                                 |                                                                                   | 0.0                                                                                                                                                                 | 0.0                                                                                                                                                                 |                                                                                   | 0.0                                                                                | 0.0                                                                                                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                                                                                                     |                                                                                     |
| Total Lost Time (s)     | 7.5                                                                                                                                                                 | 7.5                                                                                                                                                                 |                                                                                   | 7.5                                                                                                                                                                 | 7.5                                                                                                                                                                 |                                                                                   | 7.4                                                                                | 7.4                                                                                                                                                                     | 7.4                                                                                 | 7.4                                                                                 | 7.4                                                                                                                                                                     |                                                                                     |
| Lead/Lag                | Lead                                                                                                                                                                | Lag                                                                                                                                                                 |                                                                                   | Lead                                                                                                                                                                | Lag                                                                                                                                                                 |                                                                                   | Lead                                                                               | Lag                                                                                                                                                                     | Lag                                                                                 | Lead                                                                                | Lag                                                                                                                                                                     |                                                                                     |
| Lead-Lag Optimize?      | Yes                                                                                                                                                                 | Yes                                                                                                                                                                 |                                                                                   | Yes                                                                                                                                                                 | Yes                                                                                                                                                                 |                                                                                   | Yes                                                                                | Yes                                                                                                                                                                     | Yes                                                                                 | Yes                                                                                 | Yes                                                                                                                                                                     |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                                                                                                                 | 3.0                                                                                                                                                                 |                                                                                   | 3.0                                                                                                                                                                 | 3.0                                                                                                                                                                 |                                                                                   | 3.0                                                                                | 3.0                                                                                                                                                                     | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                                                                                                     |                                                                                     |
| Recall Mode             | None                                                                                                                                                                | None                                                                                                                                                                |                                                                                   | None                                                                                                                                                                | None                                                                                                                                                                |                                                                                   | None                                                                               | C-Max                                                                                                                                                                   | C-Max                                                                               | None                                                                                | C-Max                                                                                                                                                                   |                                                                                     |
| Walk Time (s)           |                                                                                                                                                                     | 7.0                                                                                                                                                                 |                                                                                   |                                                                                                                                                                     | 7.0                                                                                                                                                                 |                                                                                   |                                                                                    | 7.0                                                                                                                                                                     | 7.0                                                                                 |                                                                                     | 7.0                                                                                                                                                                     |                                                                                     |
| Flash Dont Walk (s)     |                                                                                                                                                                     | 29.1                                                                                                                                                                |                                                                                   |                                                                                                                                                                     | 29.1                                                                                                                                                                |                                                                                   |                                                                                    | 24.9                                                                                                                                                                    | 24.9                                                                                |                                                                                     | 24.9                                                                                                                                                                    |                                                                                     |
| Pedestrian Calls (#/hr) |                                                                                                                                                                     | 0                                                                                                                                                                   |                                                                                   |                                                                                                                                                                     | 0                                                                                                                                                                   |                                                                                   |                                                                                    | 0                                                                                                                                                                       | 0                                                                                   |                                                                                     | 0                                                                                                                                                                       |                                                                                     |
| Act Effect Green (s)    | 10.8                                                                                                                                                                | 10.0                                                                                                                                                                |                                                                                   | 5.5                                                                                                                                                                 | 10.0                                                                                                                                                                |                                                                                   | 103.4                                                                              | 84.9                                                                                                                                                                    |                                                                                     | 83.2                                                                                | 72.1                                                                                                                                                                    |                                                                                     |
| Actuated g/C Ratio      | 0.08                                                                                                                                                                | 0.08                                                                                                                                                                |                                                                                   | 0.04                                                                                                                                                                | 0.08                                                                                                                                                                |                                                                                   | 0.80                                                                               | 0.65                                                                                                                                                                    |                                                                                     | 0.64                                                                                | 0.55                                                                                                                                                                    |                                                                                     |
| v/c Ratio               | 0.25                                                                                                                                                                | 0.08                                                                                                                                                                |                                                                                   | 0.11                                                                                                                                                                | 0.01                                                                                                                                                                |                                                                                   | 0.56                                                                               | 0.84                                                                                                                                                                    |                                                                                     | 0.54                                                                                | 0.54                                                                                                                                                                    |                                                                                     |
| Control Delay           | 57.9                                                                                                                                                                | 0.3                                                                                                                                                                 |                                                                                   | 61.7                                                                                                                                                                | 0.0                                                                                                                                                                 |                                                                                   | 11.3                                                                               | 17.1                                                                                                                                                                    |                                                                                     | 33.5                                                                                | 15.5                                                                                                                                                                    |                                                                                     |
| Queue Delay             | 0.0                                                                                                                                                                 | 0.0                                                                                                                                                                 |                                                                                   | 0.0                                                                                                                                                                 | 0.0                                                                                                                                                                 |                                                                                   | 0.0                                                                                | 0.0                                                                                                                                                                     |                                                                                     | 0.0                                                                                 | 0.0                                                                                                                                                                     |                                                                                     |

4: Limebank Road & Realigned Leitrim Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
AM Peak Hour (Coordinated)

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Total Delay            | 57.9                                                                              | 0.3                                                                               |                                                                                   | 61.7                                                                              | 0.0                                                                               |                                                                                   | 11.3                                                                               | 17.1                                                                                |                                                                                     | 33.5                                                                                | 15.5                                                                                |                                                                                     |
| LOS                    | E                                                                                 | A                                                                                 |                                                                                   | E                                                                                 | A                                                                                 |                                                                                   | B                                                                                  | B                                                                                   |                                                                                     | C                                                                                   | B                                                                                   |                                                                                     |
| Approach Delay         |                                                                                   | 33.4                                                                              |                                                                                   |                                                                                   | 46.3                                                                              |                                                                                   |                                                                                    | 16.3                                                                                |                                                                                     |                                                                                     | 17.5                                                                                |                                                                                     |
| Approach LOS           |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Queue Length 50th (m)  | 7.7                                                                               | 0.0                                                                               |                                                                                   | 1.9                                                                               | 0.0                                                                               |                                                                                   | 5.3                                                                                | 161.8                                                                               |                                                                                     | 9.4                                                                                 | 62.2                                                                                |                                                                                     |
| Queue Length 95th (m)  | 15.5                                                                              | 0.0                                                                               |                                                                                   | 5.7                                                                               | 0.0                                                                               |                                                                                   | m24.0                                                                              | #311.4                                                                              |                                                                                     | m22.9                                                                               | m71.9                                                                               |                                                                                     |
| Internal Link Dist (m) |                                                                                   | 448.7                                                                             |                                                                                   |                                                                                   | 402.7                                                                             |                                                                                   |                                                                                    | 611.3                                                                               |                                                                                     |                                                                                     | 485.3                                                                               |                                                                                     |
| Turn Bay Length (m)    | 90.0                                                                              |                                                                                   |                                                                                   | 125.0                                                                             |                                                                                   |                                                                                   | 90.0                                                                               |                                                                                     |                                                                                     | 90.0                                                                                |                                                                                     |                                                                                     |
| Base Capacity (vph)    | 248                                                                               | 1005                                                                              |                                                                                   | 141                                                                               | 986                                                                               |                                                                                   | 500                                                                                | 2192                                                                                |                                                                                     | 210                                                                                 | 1693                                                                                |                                                                                     |
| Starvation Cap Reductn | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn    | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio      | 0.25                                                                              | 0.04                                                                              |                                                                                   | 0.11                                                                              | 0.01                                                                              |                                                                                   | 0.55                                                                               | 0.84                                                                                |                                                                                     | 0.54                                                                                | 0.54                                                                                |                                                                                     |

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 23 (18%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 17.5

Intersection LOS: B

Intersection Capacity Utilization 87.3%

ICU Level of Service E

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Limebank Road & Realigned Leitrim Road



1: Limebank Road & Leitrim Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
PM Peak Hour (Coordinated)

|                         |  |  |  |  |  |  |   |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations     |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)    | 11                                                                                | 190                                                                               | 30                                                                                | 508                                                                               | 277                                                                               | 212                                                                               | 4                                                                                   | 733                                                                                 | 335                                                                                 | 280                                                                                 | 1167                                                                                | 6                                                                                   |
| Future Volume (vph)     | 11                                                                                | 190                                                                               | 30                                                                                | 508                                                                               | 277                                                                               | 212                                                                               | 4                                                                                   | 733                                                                                 | 335                                                                                 | 280                                                                                 | 1167                                                                                | 6                                                                                   |
| Ideal Flow (vphpl)      | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                |
| Storage Length (m)      | 130.0                                                                             |                                                                                   | 130.0                                                                             | 120.0                                                                             |                                                                                   | 150.0                                                                             | 195.0                                                                               |                                                                                     | 180.0                                                                               | 210.0                                                                               |                                                                                     | 185.0                                                                               |
| Storage Lanes           | 2                                                                                 |                                                                                   | 1                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 2                                                                                   |                                                                                     | 1                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   |
| Taper Length (m)        | 7.6                                                                               |                                                                                   |                                                                                   | 7.6                                                                               |                                                                                   |                                                                                   | 7.6                                                                                 |                                                                                     |                                                                                     | 7.6                                                                                 |                                                                                     |                                                                                     |
| Lane Util. Factor       | 0.97                                                                              | 1.00                                                                              | 1.00                                                                              | 0.97                                                                              | 1.00                                                                              | 1.00                                                                              | 0.97                                                                                | 0.95                                                                                | 1.00                                                                                | 0.97                                                                                | 0.95                                                                                | 1.00                                                                                |
| Ped Bike Factor         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     | 0.99                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |
| Frt                     |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.850                                                                               |
| Flt Protected           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (prot)       | 3354                                                                              | 1767                                                                              | 1381                                                                              | 3257                                                                              | 1802                                                                              | 1488                                                                              | 3354                                                                                | 3325                                                                                | 1419                                                                                | 3106                                                                                | 3424                                                                                | 1289                                                                                |
| Flt Permitted           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                               |                                                                                     |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |
| Satd. Flow (perm)       | 3354                                                                              | 1767                                                                              | 1381                                                                              | 3257                                                                              | 1802                                                                              | 1488                                                                              | 3354                                                                                | 3325                                                                                | 1400                                                                                | 3102                                                                                | 3424                                                                                | 1289                                                                                |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                   |                                                                                   | 243                                                                               |                                                                                   |                                                                                   | 212                                                                               |                                                                                     |                                                                                     | 335                                                                                 |                                                                                     |                                                                                     | 190                                                                                 |
| Link Speed (k/h)        |                                                                                   | 80                                                                                |                                                                                   |                                                                                   | 80                                                                                |                                                                                   |                                                                                     | 80                                                                                  |                                                                                     |                                                                                     | 80                                                                                  |                                                                                     |
| Link Distance (m)       |                                                                                   | 395.5                                                                             |                                                                                   |                                                                                   | 472.5                                                                             |                                                                                   |                                                                                     | 509.3                                                                               |                                                                                     |                                                                                     | 517.2                                                                               |                                                                                     |
| Travel Time (s)         |                                                                                   | 17.8                                                                              |                                                                                   |                                                                                   | 21.3                                                                              |                                                                                   |                                                                                     | 22.9                                                                                |                                                                                     |                                                                                     | 23.3                                                                                |                                                                                     |
| Confl. Peds. (#/hr)     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     | 1                                                                                   | 1                                                                                   |                                                                                     |                                                                                     |
| Peak Hour Factor        | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Heavy Vehicles (%)      | 0%                                                                                | 3%                                                                                | 12%                                                                               | 3%                                                                                | 1%                                                                                | 4%                                                                                | 0%                                                                                  | 4%                                                                                  | 9%                                                                                  | 8%                                                                                  | 1%                                                                                  | 20%                                                                                 |
| Adj. Flow (vph)         | 11                                                                                | 190                                                                               | 30                                                                                | 508                                                                               | 277                                                                               | 212                                                                               | 4                                                                                   | 733                                                                                 | 335                                                                                 | 280                                                                                 | 1167                                                                                | 6                                                                                   |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 11                                                                                | 190                                                                               | 30                                                                                | 508                                                                               | 277                                                                               | 212                                                                               | 4                                                                                   | 733                                                                                 | 335                                                                                 | 280                                                                                 | 1167                                                                                | 6                                                                                   |
| Turn Type               | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                                | NA                                                                                  | Perm                                                                                | Prot                                                                                | NA                                                                                  | Perm                                                                                |
| Protected Phases        | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases        |                                                                                   |                                                                                   | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                     |                                                                                     | 2                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |
| Detector Phase          | 7                                                                                 | 4                                                                                 | 4                                                                                 | 3                                                                                 | 8                                                                                 | 8                                                                                 | 5                                                                                   | 2                                                                                   | 2                                                                                   | 1                                                                                   | 6                                                                                   | 6                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 10.0                                                                              | 10.0                                                                              | 5.0                                                                               | 10.0                                                                              | 10.0                                                                              | 5.0                                                                                 | 21.0                                                                                | 21.0                                                                                | 5.0                                                                                 | 21.0                                                                                | 21.0                                                                                |
| Minimum Split (s)       | 11.1                                                                              | 30.8                                                                              | 30.8                                                                              | 11.1                                                                              | 30.8                                                                              | 30.8                                                                              | 11.6                                                                                | 27.6                                                                                | 27.6                                                                                | 11.6                                                                                | 27.6                                                                                | 27.6                                                                                |
| Total Split (s)         | 12.0                                                                              | 31.0                                                                              | 31.0                                                                              | 30.0                                                                              | 49.0                                                                              | 49.0                                                                              | 12.0                                                                                | 47.0                                                                                | 47.0                                                                                | 22.0                                                                                | 57.0                                                                                | 57.0                                                                                |
| Total Split (%)         | 9.2%                                                                              | 23.8%                                                                             | 23.8%                                                                             | 23.1%                                                                             | 37.7%                                                                             | 37.7%                                                                             | 9.2%                                                                                | 36.2%                                                                               | 36.2%                                                                               | 16.9%                                                                               | 43.8%                                                                               | 43.8%                                                                               |
| Maximum Green (s)       | 5.9                                                                               | 24.2                                                                              | 24.2                                                                              | 23.9                                                                              | 42.2                                                                              | 42.2                                                                              | 5.4                                                                                 | 40.4                                                                                | 40.4                                                                                | 15.4                                                                                | 50.4                                                                                | 50.4                                                                                |
| Yellow Time (s)         | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 |
| All-Red Time (s)        | 1.9                                                                               | 2.6                                                                               | 2.6                                                                               | 1.9                                                                               | 2.6                                                                               | 2.6                                                                               | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 | 2.0                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)     | 6.1                                                                               | 6.8                                                                               | 6.8                                                                               | 6.1                                                                               | 6.8                                                                               | 6.8                                                                               | 6.6                                                                                 | 6.6                                                                                 | 6.6                                                                                 | 6.6                                                                                 | 6.6                                                                                 | 6.6                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                                | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lag                                                                                 | Lag                                                                                 |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                              | None                                                                                | C-Min                                                                               | C-Min                                                                               | None                                                                                | C-Min                                                                               | C-Min                                                                               |
| Walk Time (s)           |                                                                                   | 7.0                                                                               | 7.0                                                                               |                                                                                   | 7.0                                                                               | 7.0                                                                               |                                                                                     | 7.0                                                                                 | 7.0                                                                                 |                                                                                     | 7.0                                                                                 | 7.0                                                                                 |
| Flash Dont Walk (s)     |                                                                                   | 17.0                                                                              | 17.0                                                                              |                                                                                   | 17.0                                                                              | 17.0                                                                              |                                                                                     | 14.0                                                                                | 14.0                                                                                |                                                                                     | 14.0                                                                                | 14.0                                                                                |
| Pedestrian Calls (#/hr) |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Act Effect Green (s)    | 5.7                                                                               | 18.9                                                                              | 18.9                                                                              | 23.5                                                                              | 43.7                                                                              | 43.7                                                                              | 5.6                                                                                 | 45.9                                                                                | 45.9                                                                                | 15.6                                                                                | 65.7                                                                                | 65.7                                                                                |
| Actuated g/C Ratio      | 0.04                                                                              | 0.15                                                                              | 0.15                                                                              | 0.18                                                                              | 0.34                                                                              | 0.34                                                                              | 0.04                                                                                | 0.35                                                                                | 0.35                                                                                | 0.12                                                                                | 0.51                                                                                | 0.51                                                                                |
| v/c Ratio               | 0.07                                                                              | 0.74                                                                              | 0.07                                                                              | 0.86                                                                              | 0.46                                                                              | 0.33                                                                              | 0.03                                                                                | 0.62                                                                                | 0.47                                                                                | 0.75                                                                                | 0.67                                                                                | 0.01                                                                                |

1: Limebank Road & Leitrim Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
PM Peak Hour (Coordinated)

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Control Delay          | 60.6                                                                              | 70.3                                                                              | 0.4                                                                               | 67.1                                                                              | 36.9                                                                              | 5.6                                                                               | 52.2                                                                                | 30.3                                                                                | 8.6                                                                                 | 68.3                                                                                | 28.4                                                                                | 0.0                                                                                 |
| Queue Delay            | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay            | 60.6                                                                              | 70.3                                                                              | 0.4                                                                               | 67.1                                                                              | 36.9                                                                              | 5.6                                                                               | 52.2                                                                                | 30.3                                                                                | 8.6                                                                                 | 68.3                                                                                | 28.4                                                                                | 0.0                                                                                 |
| LOS                    | E                                                                                 | E                                                                                 | A                                                                                 | E                                                                                 | D                                                                                 | A                                                                                 | D                                                                                   | C                                                                                   | A                                                                                   | E                                                                                   | C                                                                                   | A                                                                                   |
| Approach Delay         | 60.8                                                                              |                                                                                   |                                                                                   | 45.6                                                                              |                                                                                   |                                                                                   | 23.6                                                                                |                                                                                     |                                                                                     | 35.9                                                                                |                                                                                     |                                                                                     |
| Approach LOS           | E                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |
| Queue Length 50th (m)  | 1.4                                                                               | 47.1                                                                              | 0.0                                                                               | 63.9                                                                              | 50.0                                                                              | 0.0                                                                               | 0.4                                                                                 | 68.8                                                                                | 21.2                                                                                | 35.7                                                                                | 116.1                                                                               | 0.0                                                                                 |
| Queue Length 95th (m)  | 4.6                                                                               | 69.5                                                                              | 0.0                                                                               | #91.5                                                                             | 82.9                                                                              | 17.0                                                                              | m1.0                                                                                | 90.1                                                                                | m44.6                                                                               | #54.5                                                                               | 175.1                                                                               | 0.0                                                                                 |
| Internal Link Dist (m) | 371.5                                                                             |                                                                                   |                                                                                   | 448.5                                                                             |                                                                                   |                                                                                   | 485.3                                                                               |                                                                                     |                                                                                     | 493.2                                                                               |                                                                                     |                                                                                     |
| Turn Bay Length (m)    | 130.0                                                                             |                                                                                   | 130.0                                                                             | 120.0                                                                             |                                                                                   | 150.0                                                                             | 195.0                                                                               |                                                                                     | 180.0                                                                               | 210.0                                                                               |                                                                                     | 185.0                                                                               |
| Base Capacity (vph)    | 152                                                                               | 328                                                                               | 454                                                                               | 610                                                                               | 621                                                                               | 652                                                                               | 143                                                                                 | 1173                                                                                | 710                                                                                 | 387                                                                                 | 1731                                                                                | 745                                                                                 |
| Starvation Cap Reductn | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio      | 0.07                                                                              | 0.58                                                                              | 0.07                                                                              | 0.83                                                                              | 0.45                                                                              | 0.33                                                                              | 0.03                                                                                | 0.62                                                                                | 0.47                                                                                | 0.72                                                                                | 0.67                                                                                | 0.01                                                                                |

Intersection Summary

|                                                                        |                        |
|------------------------------------------------------------------------|------------------------|
| Area Type:                                                             | Other                  |
| Cycle Length: 130                                                      |                        |
| Actuated Cycle Length: 130                                             |                        |
| Offset: 128 (98%), Referenced to phase 2:NBT and 6:SBT, Start of Green |                        |
| Natural Cycle: 105                                                     |                        |
| Control Type: Actuated-Coordinated                                     |                        |
| Maximum v/c Ratio: 0.86                                                |                        |
| Intersection Signal Delay: 36.5                                        | Intersection LOS: D    |
| Intersection Capacity Utilization 85.8%                                | ICU Level of Service E |
| Analysis Period (min) 15                                               |                        |
| # 95th percentile volume exceeds capacity, queue may be longer.        |                        |
| Queue shown is maximum after two cycles.                               |                        |
| m Volume for 95th percentile queue is metered by upstream signal.      |                        |

Splits and Phases: 1: Limebank Road & Leitrim Road

|                                                                                        |                                                                                            |                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 (R) |  Ø3 |  Ø4 |
| 22 s                                                                                   | 47 s                                                                                       | 30 s                                                                                   | 31 s                                                                                     |
|  Ø5 |  Ø6 (R) |  Ø7 |  Ø8  |
| 12 s                                                                                   | 57 s                                                                                       | 12 s                                                                                   | 49 s                                                                                     |

2: Limebank Road & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
PM Peak Hour (Coordinated)

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBU                                                                                | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBU                                                                                 | SBL                                                                                 |
| Lane Configurations     |  |  |                                                                                   |  |  |  |                                                                                    |  |  |  |                                                                                     |  |
| Traffic Volume (vph)    | 185                                                                               | 27                                                                                | 36                                                                                | 25                                                                                | 18                                                                                | 21                                                                                | 26                                                                                 | 43                                                                                  | 418                                                                                 | 34                                                                                  | 1                                                                                   | 63                                                                                  |
| Future Volume (vph)     | 185                                                                               | 27                                                                                | 36                                                                                | 25                                                                                | 18                                                                                | 21                                                                                | 26                                                                                 | 43                                                                                  | 418                                                                                 | 34                                                                                  | 1                                                                                   | 63                                                                                  |
| Ideal Flow (vphpl)      | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                               | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                |
| Storage Length (m)      | 100.0                                                                             |                                                                                   | 0.0                                                                               | 95.0                                                                              |                                                                                   | 60.0                                                                              |                                                                                    | 205.0                                                                               |                                                                                     | 180.0                                                                               |                                                                                     | 255.0                                                                               |
| Storage Lanes           | 2                                                                                 |                                                                                   | 0                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 |                                                                                    | 2                                                                                   |                                                                                     | 1                                                                                   |                                                                                     | 2                                                                                   |
| Taper Length (m)        | 7.6                                                                               |                                                                                   |                                                                                   | 7.6                                                                               |                                                                                   |                                                                                   |                                                                                    | 7.6                                                                                 |                                                                                     |                                                                                     |                                                                                     | 7.6                                                                                 |
| Lane Util. Factor       | 0.97                                                                              | 0.95                                                                              | 0.95                                                                              | 0.97                                                                              | 0.95                                                                              | 1.00                                                                              | 0.95                                                                               | 0.97                                                                                | 0.95                                                                                | 1.00                                                                                | 0.95                                                                                | 0.97                                                                                |
| Ped Bike Factor         | 1.00                                                                              | 0.99                                                                              |                                                                                   | 0.98                                                                              |                                                                                   | 0.99                                                                              |                                                                                    | 1.00                                                                                |                                                                                     | 0.98                                                                                |                                                                                     | 1.00                                                                                |
| Frt                     |                                                                                   | 0.914                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.850                                                                             |                                                                                    |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     |
| Flt Protected           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                    | 0.950                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.950                                                                               |
| Satd. Flow (prot)       | 3321                                                                              | 3082                                                                              | 0                                                                                 | 3257                                                                              | 3293                                                                              | 1473                                                                              | 0                                                                                  | 3313                                                                                | 3232                                                                                | 1517                                                                                | 0                                                                                   | 3289                                                                                |
| Flt Permitted           | 0.950                                                                             |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                    | 0.950                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.950                                                                               |
| Satd. Flow (perm)       | 3315                                                                              | 3082                                                                              | 0                                                                                 | 3207                                                                              | 3293                                                                              | 1454                                                                              | 0                                                                                  | 3310                                                                                | 3232                                                                                | 1493                                                                                | 0                                                                                   | 3279                                                                                |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   | Yes                                                                               |                                                                                    |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Satd. Flow (RTOR)       |                                                                                   | 36                                                                                |                                                                                   |                                                                                   |                                                                                   | 141                                                                               |                                                                                    |                                                                                     |                                                                                     | 139                                                                                 |                                                                                     |                                                                                     |
| Link Speed (k/h)        |                                                                                   | 60                                                                                |                                                                                   |                                                                                   | 60                                                                                |                                                                                   |                                                                                    |                                                                                     | 80                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Link Distance (m)       |                                                                                   | 243.4                                                                             |                                                                                   |                                                                                   | 525.1                                                                             |                                                                                   |                                                                                    |                                                                                     | 473.0                                                                               |                                                                                     |                                                                                     |                                                                                     |
| Travel Time (s)         |                                                                                   | 14.6                                                                              |                                                                                   |                                                                                   | 31.5                                                                              |                                                                                   |                                                                                    |                                                                                     | 21.3                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Confl. Peds. (#/hr)     | 1                                                                                 |                                                                                   | 9                                                                                 | 9                                                                                 |                                                                                   | 1                                                                                 |                                                                                    | 4                                                                                   |                                                                                     | 3                                                                                   |                                                                                     | 3                                                                                   |
| Confl. Bikes (#/hr)     |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | 1                                                                                   |                                                                                     |                                                                                     |
| Peak Hour Factor        | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Heavy Vehicles (%)      | 1%                                                                                | 3%                                                                                | 0%                                                                                | 3%                                                                                | 5%                                                                                | 5%                                                                                | 0%                                                                                 | 2%                                                                                  | 7%                                                                                  | 2%                                                                                  | 0%                                                                                  | 2%                                                                                  |
| Adj. Flow (vph)         | 185                                                                               | 27                                                                                | 36                                                                                | 25                                                                                | 18                                                                                | 21                                                                                | 26                                                                                 | 43                                                                                  | 418                                                                                 | 34                                                                                  | 1                                                                                   | 63                                                                                  |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 185                                                                               | 63                                                                                | 0                                                                                 | 25                                                                                | 18                                                                                | 21                                                                                | 0                                                                                  | 69                                                                                  | 418                                                                                 | 34                                                                                  | 0                                                                                   | 64                                                                                  |
| Turn Type               | Prot                                                                              | NA                                                                                |                                                                                   | Prot                                                                              | NA                                                                                | Perm                                                                              | Prot                                                                               | Prot                                                                                | NA                                                                                  | Perm                                                                                | Prot                                                                                | Prot                                                                                |
| Protected Phases        | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                  | 5                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   | 1                                                                                   |
| Permitted Phases        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 8                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   |                                                                                     |                                                                                     |
| Detector Phase          | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 | 8                                                                                 | 5                                                                                  | 5                                                                                   | 2                                                                                   | 2                                                                                   | 1                                                                                   | 1                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                               | 10.0                                                                              |                                                                                   | 5.0                                                                               | 10.0                                                                              | 10.0                                                                              | 5.0                                                                                | 5.0                                                                                 | 15.0                                                                                | 15.0                                                                                | 5.0                                                                                 | 5.0                                                                                 |
| Minimum Split (s)       | 11.5                                                                              | 41.5                                                                              |                                                                                   | 11.5                                                                              | 41.5                                                                              | 41.5                                                                              | 11.6                                                                               | 11.6                                                                                | 41.7                                                                                | 41.7                                                                                | 11.6                                                                                | 11.6                                                                                |
| Total Split (s)         | 16.0                                                                              | 46.0                                                                              |                                                                                   | 12.0                                                                              | 42.0                                                                              | 42.0                                                                              | 12.0                                                                               | 12.0                                                                                | 60.0                                                                                | 60.0                                                                                | 12.0                                                                                | 12.0                                                                                |
| Total Split (%)         | 12.3%                                                                             | 35.4%                                                                             |                                                                                   | 9.2%                                                                              | 32.3%                                                                             | 32.3%                                                                             | 9.2%                                                                               | 9.2%                                                                                | 46.2%                                                                               | 46.2%                                                                               | 9.2%                                                                                | 9.2%                                                                                |
| Maximum Green (s)       | 9.5                                                                               | 39.5                                                                              |                                                                                   | 5.5                                                                               | 35.5                                                                              | 35.5                                                                              | 5.4                                                                                | 5.4                                                                                 | 53.3                                                                                | 53.3                                                                                | 5.4                                                                                 | 5.4                                                                                 |
| Yellow Time (s)         | 3.7                                                                               | 3.7                                                                               |                                                                                   | 3.7                                                                               | 3.7                                                                               | 3.7                                                                               | 4.6                                                                                | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 | 4.6                                                                                 |
| All-Red Time (s)        | 2.8                                                                               | 2.8                                                                               |                                                                                   | 2.8                                                                               | 2.8                                                                               | 2.8                                                                               | 2.0                                                                                | 2.0                                                                                 | 2.1                                                                                 | 2.1                                                                                 | 2.0                                                                                 | 2.0                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 |
| Total Lost Time (s)     | 6.5                                                                               | 6.5                                                                               |                                                                                   | 6.5                                                                               | 6.5                                                                               | 6.5                                                                               |                                                                                    | 6.6                                                                                 | 6.7                                                                                 | 6.7                                                                                 |                                                                                     | 6.6                                                                                 |
| Lead/Lag                | Lead                                                                              | Lag                                                                               |                                                                                   | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                               | Lead                                                                                | Lag                                                                                 | Lag                                                                                 | Lead                                                                                | Lead                                                                                |
| Lead-Lag Optimize?      | Yes                                                                               | Yes                                                                               |                                                                                   | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | None                                                                              | None                                                                              |                                                                                   | None                                                                              | None                                                                              | None                                                                              | None                                                                               | None                                                                                | C-Min                                                                               | C-Min                                                                               | None                                                                                | None                                                                                |
| Walk Time (s)           |                                                                                   | 10.0                                                                              |                                                                                   |                                                                                   | 10.0                                                                              | 10.0                                                                              |                                                                                    |                                                                                     | 10.0                                                                                | 10.0                                                                                |                                                                                     |                                                                                     |
| Flash Dont Walk (s)     |                                                                                   | 25.0                                                                              |                                                                                   |                                                                                   | 25.0                                                                              | 25.0                                                                              |                                                                                    |                                                                                     | 25.0                                                                                | 25.0                                                                                |                                                                                     |                                                                                     |
| Pedestrian Calls (#/hr) |                                                                                   | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                    |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |
| Act Effect Green (s)    | 10.9                                                                              | 13.2                                                                              |                                                                                   | 6.0                                                                               | 10.0                                                                              | 10.0                                                                              |                                                                                    | 8.1                                                                                 | 83.9                                                                                | 83.9                                                                                |                                                                                     | 7.9                                                                                 |
| Actuated g/C Ratio      | 0.08                                                                              | 0.10                                                                              |                                                                                   | 0.05                                                                              | 0.08                                                                              | 0.08                                                                              |                                                                                    | 0.06                                                                                | 0.65                                                                                | 0.65                                                                                |                                                                                     | 0.06                                                                                |

2: Limebank Road & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
PM Peak Hour (Coordinated)

|                         | ↓     | ↙     |
|-------------------------|-------|-------|
| Lane Group              | SBT   | SBR   |
| Lane Configurations     | ↑↑    | ↑     |
| Traffic Volume (vph)    | 1268  | 440   |
| Future Volume (vph)     | 1268  | 440   |
| Ideal Flow (vphpl)      | 1800  | 1800  |
| Storage Length (m)      |       | 230.0 |
| Storage Lanes           |       | 1     |
| Taper Length (m)        |       |       |
| Lane Util. Factor       | 0.95  | 1.00  |
| Ped Bike Factor         |       | 0.98  |
| Frt                     |       | 0.850 |
| Flt Protected           |       |       |
| Satd. Flow (prot)       | 3424  | 1532  |
| Flt Permitted           |       |       |
| Satd. Flow (perm)       | 3424  | 1507  |
| Right Turn on Red       |       | Yes   |
| Satd. Flow (RTOR)       |       | 440   |
| Link Speed (k/h)        | 80    |       |
| Link Distance (m)       | 635.3 |       |
| Travel Time (s)         | 28.6  |       |
| Confl. Peds. (#/hr)     |       | 4     |
| Confl. Bikes (#/hr)     |       |       |
| Peak Hour Factor        | 1.00  | 1.00  |
| Heavy Vehicles (%)      | 1%    | 1%    |
| Adj. Flow (vph)         | 1268  | 440   |
| Shared Lane Traffic (%) |       |       |
| Lane Group Flow (vph)   | 1268  | 440   |
| Turn Type               | NA    | Perm  |
| Protected Phases        | 6     |       |
| Permitted Phases        |       | 6     |
| Detector Phase          | 6     | 6     |
| Switch Phase            |       |       |
| Minimum Initial (s)     | 15.0  | 15.0  |
| Minimum Split (s)       | 41.7  | 41.7  |
| Total Split (s)         | 60.0  | 60.0  |
| Total Split (%)         | 46.2% | 46.2% |
| Maximum Green (s)       | 53.3  | 53.3  |
| Yellow Time (s)         | 4.6   | 4.6   |
| All-Red Time (s)        | 2.1   | 2.1   |
| Lost Time Adjust (s)    | 0.0   | 0.0   |
| Total Lost Time (s)     | 6.7   | 6.7   |
| Lead/Lag                | Lag   | Lag   |
| Lead-Lag Optimize?      | Yes   | Yes   |
| Vehicle Extension (s)   | 3.0   | 3.0   |
| Recall Mode             | C-Min | C-Min |
| Walk Time (s)           | 10.0  | 10.0  |
| Flash Dont Walk (s)     | 25.0  | 25.0  |
| Pedestrian Calls (#/hr) | 0     | 0     |
| Act Effct Green (s)     | 83.8  | 83.8  |
| Actuated g/C Ratio      | 0.64  | 0.64  |

2: Limebank Road & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
PM Peak Hour (Coordinated)

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBU                                                                                | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBU                                                                                 | SBL                                                                                 |
| v/c Ratio              | 0.67                                                                              | 0.18                                                                              |                                                                                   | 0.17                                                                              | 0.07                                                                              | 0.09                                                                              |                                                                                    | 0.34                                                                                | 0.20                                                                                | 0.03                                                                                |                                                                                     | 0.32                                                                                |
| Control Delay          | 69.9                                                                              | 28.1                                                                              |                                                                                   | 62.3                                                                              | 56.5                                                                              | 0.7                                                                               |                                                                                    | 62.3                                                                                | 11.5                                                                                | 0.1                                                                                 |                                                                                     | 75.6                                                                                |
| Queue Delay            | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     | 0.0                                                                                 |
| Total Delay            | 69.9                                                                              | 28.1                                                                              |                                                                                   | 62.3                                                                              | 56.5                                                                              | 0.7                                                                               |                                                                                    | 62.3                                                                                | 11.5                                                                                | 0.1                                                                                 |                                                                                     | 75.6                                                                                |
| LOS                    | E                                                                                 | C                                                                                 |                                                                                   | E                                                                                 | E                                                                                 | A                                                                                 |                                                                                    | E                                                                                   | B                                                                                   | A                                                                                   |                                                                                     | E                                                                                   |
| Approach Delay         |                                                                                   | 59.3                                                                              |                                                                                   |                                                                                   | 40.5                                                                              |                                                                                   |                                                                                    |                                                                                     | 17.5                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS           |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Queue Length 50th (m)  | 23.6                                                                              | 3.2                                                                               |                                                                                   | 3.2                                                                               | 2.3                                                                               | 0.0                                                                               |                                                                                    | 8.9                                                                                 | 27.3                                                                                | 0.0                                                                                 |                                                                                     | 8.9                                                                                 |
| Queue Length 95th (m)  | #41.5                                                                             | 10.4                                                                              |                                                                                   | 8.0                                                                               | 6.4                                                                               | 0.0                                                                               |                                                                                    | 16.3                                                                                | 35.5                                                                                | 0.0                                                                                 |                                                                                     | m11.8                                                                               |
| Internal Link Dist (m) |                                                                                   | 219.4                                                                             |                                                                                   |                                                                                   | 501.1                                                                             |                                                                                   |                                                                                    |                                                                                     | 449.0                                                                               |                                                                                     |                                                                                     |                                                                                     |
| Turn Bay Length (m)    | 100.0                                                                             |                                                                                   |                                                                                   | 95.0                                                                              |                                                                                   | 60.0                                                                              |                                                                                    | 205.0                                                                               |                                                                                     | 180.0                                                                               |                                                                                     | 255.0                                                                               |
| Base Capacity (vph)    | 278                                                                               | 961                                                                               |                                                                                   | 149                                                                               | 899                                                                               | 499                                                                               |                                                                                    | 205                                                                                 | 2086                                                                                | 1013                                                                                |                                                                                     | 200                                                                                 |
| Starvation Cap Reductn | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Storage Cap Reductn    | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                    | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   |
| Reduced v/c Ratio      | 0.67                                                                              | 0.07                                                                              |                                                                                   | 0.17                                                                              | 0.02                                                                              | 0.04                                                                              |                                                                                    | 0.34                                                                                | 0.20                                                                                | 0.03                                                                                |                                                                                     | 0.32                                                                                |

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 52 (40%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 15.8

Intersection LOS: B

Intersection Capacity Utilization 68.0%

ICU Level of Service C

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Limebank Road & Spratt Road

|                                                                                        |                                                                                            |                                                                                        |                                                                                          |
|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|  Ø1 |  Ø2 (R) |  Ø3 |  Ø4 |
| 12 s                                                                                   | 60 s                                                                                       | 12 s                                                                                   | 46 s                                                                                     |
|  Ø5 |  Ø6 (R) |  Ø7 |  Ø8 |
| 12 s                                                                                   | 60 s                                                                                       | 16 s                                                                                   | 42 s                                                                                     |

2: Limebank Road & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
PM Peak Hour (Coordinated)



| Lane Group             | SBT   | SBR   |
|------------------------|-------|-------|
| v/c Ratio              | 0.57  | 0.39  |
| Control Delay          | 7.5   | 1.1   |
| Queue Delay            | 0.0   | 0.0   |
| Total Delay            | 7.5   | 1.1   |
| LOS                    | A     | A     |
| Approach Delay         | 8.4   |       |
| Approach LOS           | A     |       |
| Queue Length 50th (m)  | 43.4  | 0.0   |
| Queue Length 95th (m)  | 33.0  | m0.4  |
| Internal Link Dist (m) | 611.3 |       |
| Turn Bay Length (m)    |       | 230.0 |
| Base Capacity (vph)    | 2207  | 1127  |
| Starvation Cap Reductn | 0     | 0     |
| Spillback Cap Reductn  | 0     | 0     |
| Storage Cap Reductn    | 0     | 0     |
| Reduced v/c Ratio      | 0.57  | 0.39  |
| Intersection Summary   |       |       |

3: Urbandale Plaza & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
PM Peak Hour (Coordinated)

|                         |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBU                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                                 | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 |
| Lane Configurations     |  |  |                                                                                   |                                                                                   |  |  |                                                                                     |  |  |                                                                                     |                                                                                     |  |
| Traffic Volume (vph)    | 1                                                                                 | 239                                                                               | 30                                                                                | 2                                                                                 | 37                                                                                | 457                                                                               | 6                                                                                   | 58                                                                                  | 0                                                                                   | 3                                                                                   | 4                                                                                   | 0                                                                                   |
| Future Volume (vph)     | 1                                                                                 | 239                                                                               | 30                                                                                | 2                                                                                 | 37                                                                                | 457                                                                               | 6                                                                                   | 58                                                                                  | 0                                                                                   | 3                                                                                   | 4                                                                                   | 0                                                                                   |
| Ideal Flow (vphpl)      | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                |
| Lane Util. Factor       | 1.00                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 1.00                                                                              | 0.95                                                                              | 0.95                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Ped Bike Factor         |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Frt                     |                                                                                   | 0.983                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.998                                                                             |                                                                                     |                                                                                     | 0.850                                                                               |                                                                                     |                                                                                     | 0.973                                                                               |
| Flt Protected           | 0.950                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.950                                                                             |                                                                                   |                                                                                     | 0.950                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.962                                                                               |
| Satd. Flow (prot)       | 1729                                                                              | 3359                                                                              | 0                                                                                 | 0                                                                                 | 1729                                                                              | 3417                                                                              | 0                                                                                   | 1712                                                                                | 1547                                                                                | 0                                                                                   | 0                                                                                   | 1704                                                                                |
| Flt Permitted           | 0.486                                                                             |                                                                                   |                                                                                   |                                                                                   | 0.586                                                                             |                                                                                   |                                                                                     | 0.754                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.767                                                                               |
| Satd. Flow (perm)       | 885                                                                               | 3359                                                                              | 0                                                                                 | 0                                                                                 | 1061                                                                              | 3417                                                                              | 0                                                                                   | 1359                                                                                | 1547                                                                                | 0                                                                                   | 0                                                                                   | 1358                                                                                |
| Right Turn on Red       |                                                                                   |                                                                                   | Yes                                                                               |                                                                                   |                                                                                   |                                                                                   | Yes                                                                                 |                                                                                     |                                                                                     | Yes                                                                                 |                                                                                     |                                                                                     |
| Satd. Flow (RTOR)       |                                                                                   | 25                                                                                |                                                                                   |                                                                                   |                                                                                   | 2                                                                                 |                                                                                     |                                                                                     | 588                                                                                 |                                                                                     |                                                                                     | 41                                                                                  |
| Link Speed (k/h)        |                                                                                   | 60                                                                                |                                                                                   |                                                                                   |                                                                                   | 60                                                                                |                                                                                     |                                                                                     | 50                                                                                  |                                                                                     |                                                                                     | 50                                                                                  |
| Link Distance (m)       |                                                                                   | 254.5                                                                             |                                                                                   |                                                                                   |                                                                                   | 243.4                                                                             |                                                                                     |                                                                                     | 128.6                                                                               |                                                                                     |                                                                                     | 121.2                                                                               |
| Travel Time (s)         |                                                                                   | 15.3                                                                              |                                                                                   |                                                                                   |                                                                                   | 14.6                                                                              |                                                                                     |                                                                                     | 9.3                                                                                 |                                                                                     |                                                                                     | 8.7                                                                                 |
| Confl. Peds. (#/hr)     |                                                                                   |                                                                                   | 3                                                                                 |                                                                                   | 3                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Peak Hour Factor        | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Heavy Vehicles (%)      | 0%                                                                                | 1%                                                                                | 0%                                                                                | 0%                                                                                | 0%                                                                                | 1%                                                                                | 0%                                                                                  | 1%                                                                                  | 0%                                                                                  | 0%                                                                                  | 0%                                                                                  | 0%                                                                                  |
| Adj. Flow (vph)         | 1                                                                                 | 239                                                                               | 30                                                                                | 2                                                                                 | 37                                                                                | 457                                                                               | 6                                                                                   | 58                                                                                  | 0                                                                                   | 3                                                                                   | 4                                                                                   | 0                                                                                   |
| Shared Lane Traffic (%) |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Group Flow (vph)   | 1                                                                                 | 269                                                                               | 0                                                                                 | 0                                                                                 | 39                                                                                | 463                                                                               | 0                                                                                   | 58                                                                                  | 3                                                                                   | 0                                                                                   | 0                                                                                   | 5                                                                                   |
| Turn Type               | Perm                                                                              | NA                                                                                |                                                                                   | Perm                                                                              | Perm                                                                              | NA                                                                                |                                                                                     | Perm                                                                                | NA                                                                                  |                                                                                     | Perm                                                                                | NA                                                                                  |
| Protected Phases        |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                     |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |
| Permitted Phases        | 2                                                                                 |                                                                                   |                                                                                   | 6                                                                                 | 6                                                                                 |                                                                                   |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     | 4                                                                                   |                                                                                     |
| Detector Phase          | 2                                                                                 | 2                                                                                 |                                                                                   | 6                                                                                 | 6                                                                                 | 6                                                                                 |                                                                                     | 8                                                                                   | 8                                                                                   |                                                                                     | 4                                                                                   | 4                                                                                   |
| Switch Phase            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)     | 10.0                                                                              | 10.0                                                                              |                                                                                   | 10.0                                                                              | 10.0                                                                              | 10.0                                                                              |                                                                                     | 5.0                                                                                 | 5.0                                                                                 |                                                                                     | 5.0                                                                                 | 5.0                                                                                 |
| Minimum Split (s)       | 24.0                                                                              | 24.0                                                                              |                                                                                   | 32.0                                                                              | 32.0                                                                              | 32.0                                                                              |                                                                                     | 32.0                                                                                | 32.0                                                                                |                                                                                     | 32.0                                                                                | 32.0                                                                                |
| Total Split (s)         | 48.0                                                                              | 48.0                                                                              |                                                                                   | 48.0                                                                              | 48.0                                                                              | 48.0                                                                              |                                                                                     | 32.0                                                                                | 32.0                                                                                |                                                                                     | 32.0                                                                                | 32.0                                                                                |
| Total Split (%)         | 60.0%                                                                             | 60.0%                                                                             |                                                                                   | 60.0%                                                                             | 60.0%                                                                             | 60.0%                                                                             |                                                                                     | 40.0%                                                                               | 40.0%                                                                               |                                                                                     | 40.0%                                                                               | 40.0%                                                                               |
| Maximum Green (s)       | 42.0                                                                              | 42.0                                                                              |                                                                                   | 42.0                                                                              | 42.0                                                                              | 42.0                                                                              |                                                                                     | 26.0                                                                                | 26.0                                                                                |                                                                                     | 26.0                                                                                | 26.0                                                                                |
| Yellow Time (s)         | 3.7                                                                               | 3.7                                                                               |                                                                                   | 3.7                                                                               | 3.7                                                                               | 3.7                                                                               |                                                                                     | 3.3                                                                                 | 3.3                                                                                 |                                                                                     | 3.3                                                                                 | 3.3                                                                                 |
| All-Red Time (s)        | 2.3                                                                               | 2.3                                                                               |                                                                                   | 2.3                                                                               | 2.3                                                                               | 2.3                                                                               |                                                                                     | 2.7                                                                                 | 2.7                                                                                 |                                                                                     | 2.7                                                                                 | 2.7                                                                                 |
| Lost Time Adjust (s)    | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |
| Total Lost Time (s)     | 6.0                                                                               | 6.0                                                                               |                                                                                   |                                                                                   | 6.0                                                                               | 6.0                                                                               |                                                                                     | 6.0                                                                                 | 6.0                                                                                 |                                                                                     |                                                                                     | 6.0                                                                                 |
| Lead/Lag                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lead-Lag Optimize?      |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |                                                                                     | 3.0                                                                                 | 3.0                                                                                 |                                                                                     | 3.0                                                                                 | 3.0                                                                                 |
| Recall Mode             | C-Max                                                                             | C-Max                                                                             |                                                                                   | C-Max                                                                             | C-Max                                                                             | C-Max                                                                             |                                                                                     | None                                                                                | None                                                                                |                                                                                     | None                                                                                | None                                                                                |
| Walk Time (s)           | 7.0                                                                               | 7.0                                                                               |                                                                                   | 7.0                                                                               | 7.0                                                                               | 7.0                                                                               |                                                                                     | 7.0                                                                                 | 7.0                                                                                 |                                                                                     | 7.0                                                                                 | 7.0                                                                                 |
| Flash Dont Walk (s)     | 10.0                                                                              | 10.0                                                                              |                                                                                   | 10.0                                                                              | 10.0                                                                              | 10.0                                                                              |                                                                                     | 19.0                                                                                | 19.0                                                                                |                                                                                     | 19.0                                                                                | 19.0                                                                                |
| Pedestrian Calls (#/hr) | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |
| Act Effect Green (s)    | 66.5                                                                              | 66.5                                                                              |                                                                                   |                                                                                   | 66.5                                                                              | 66.5                                                                              |                                                                                     | 8.9                                                                                 | 8.9                                                                                 |                                                                                     |                                                                                     | 8.5                                                                                 |
| Actuated g/C Ratio      | 0.83                                                                              | 0.83                                                                              |                                                                                   |                                                                                   | 0.83                                                                              | 0.83                                                                              |                                                                                     | 0.11                                                                                | 0.11                                                                                |                                                                                     |                                                                                     | 0.11                                                                                |
| v/c Ratio               | 0.00                                                                              | 0.10                                                                              |                                                                                   |                                                                                   | 0.04                                                                              | 0.16                                                                              |                                                                                     | 0.39                                                                                | 0.00                                                                                |                                                                                     |                                                                                     | 0.03                                                                                |
| Control Delay           | 4.0                                                                               | 2.6                                                                               |                                                                                   |                                                                                   | 3.4                                                                               | 2.9                                                                               |                                                                                     | 39.5                                                                                | 0.0                                                                                 |                                                                                     |                                                                                     | 0.2                                                                                 |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   | 0.0                                                                               | 0.0                                                                               |                                                                                     | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |
| Total Delay             | 4.0                                                                               | 2.6                                                                               |                                                                                   |                                                                                   | 3.4                                                                               | 2.9                                                                               |                                                                                     | 39.5                                                                                | 0.0                                                                                 |                                                                                     |                                                                                     | 0.2                                                                                 |

3: Urbandale Plaza & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
PM Peak Hour (Coordinated)

|                         |      |
|-------------------------|------|
| Lane Group              | SBR  |
| Lane Configurations     |      |
| Traffic Volume (vph)    | 1    |
| Future Volume (vph)     | 1    |
| Ideal Flow (vphpl)      | 1800 |
| Lane Util. Factor       | 1.00 |
| Ped Bike Factor         |      |
| Frt                     |      |
| Flt Protected           |      |
| Satd. Flow (prot)       | 0    |
| Flt Permitted           |      |
| Satd. Flow (perm)       | 0    |
| Right Turn on Red       | Yes  |
| Satd. Flow (RTOR)       |      |
| Link Speed (k/h)        |      |
| Link Distance (m)       |      |
| Travel Time (s)         |      |
| Confl. Peds. (#/hr)     |      |
| Peak Hour Factor        | 1.00 |
| Heavy Vehicles (%)      | 0%   |
| Adj. Flow (vph)         | 1    |
| Shared Lane Traffic (%) |      |
| Lane Group Flow (vph)   | 0    |
| Turn Type               |      |
| Protected Phases        |      |
| Permitted Phases        |      |
| Detector Phase          |      |
| Switch Phase            |      |
| Minimum Initial (s)     |      |
| Minimum Split (s)       |      |
| Total Split (s)         |      |
| Total Split (%)         |      |
| Maximum Green (s)       |      |
| Yellow Time (s)         |      |
| All-Red Time (s)        |      |
| Lost Time Adjust (s)    |      |
| Total Lost Time (s)     |      |
| Lead/Lag                |      |
| Lead-Lag Optimize?      |      |
| Vehicle Extension (s)   |      |
| Recall Mode             |      |
| Walk Time (s)           |      |
| Flash Dont Walk (s)     |      |
| Pedestrian Calls (#/hr) |      |
| Act Effct Green (s)     |      |
| Actuated g/C Ratio      |      |
| v/c Ratio               |      |
| Control Delay           |      |
| Queue Delay             |      |
| Total Delay             |      |

3: Urbandale Plaza & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
PM Peak Hour (Coordinated)

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBU                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                                 | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 |
| LOS                    | A                                                                                 | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 | A                                                                                 |                                                                                     | D                                                                                   | A                                                                                   |                                                                                     |                                                                                     | A                                                                                   |
| Approach Delay         |                                                                                   | 2.6                                                                               |                                                                                   |                                                                                   |                                                                                   | 2.9                                                                               |                                                                                     |                                                                                     | 37.6                                                                                |                                                                                     |                                                                                     | 0.2                                                                                 |
| Approach LOS           |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   | A                                                                                 |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |                                                                                     | A                                                                                   |
| Queue Length 50th (m)  | 0.0                                                                               | 4.3                                                                               |                                                                                   |                                                                                   | 1.3                                                                               | 8.7                                                                               |                                                                                     | 8.3                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |
| Queue Length 95th (m)  | 0.4                                                                               | 8.8                                                                               |                                                                                   |                                                                                   | 4.2                                                                               | 15.9                                                                              |                                                                                     | 18.4                                                                                | 0.0                                                                                 |                                                                                     |                                                                                     | 0.0                                                                                 |
| Internal Link Dist (m) |                                                                                   | 230.5                                                                             |                                                                                   |                                                                                   |                                                                                   | 219.4                                                                             |                                                                                     |                                                                                     | 104.6                                                                               |                                                                                     |                                                                                     | 97.2                                                                                |
| Turn Bay Length (m)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Base Capacity (vph)    | 735                                                                               | 2794                                                                              |                                                                                   |                                                                                   | 881                                                                               | 2839                                                                              |                                                                                     | 441                                                                                 | 899                                                                                 |                                                                                     |                                                                                     | 469                                                                                 |
| Starvation Cap Reductn | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |
| Storage Cap Reductn    | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     | 0                                                                                   |
| Reduced v/c Ratio      | 0.00                                                                              | 0.10                                                                              |                                                                                   |                                                                                   | 0.04                                                                              | 0.16                                                                              |                                                                                     | 0.13                                                                                | 0.00                                                                                |                                                                                     |                                                                                     | 0.01                                                                                |

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.39

Intersection Signal Delay: 5.3

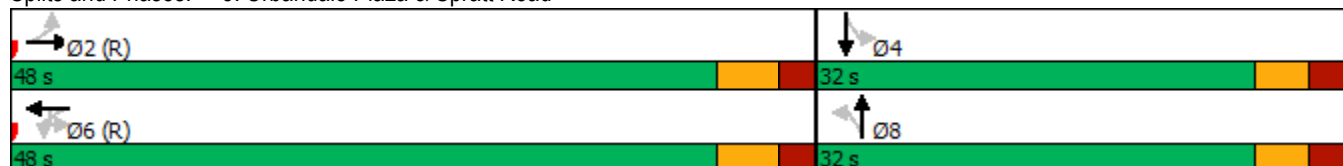
Intersection LOS: A

Intersection Capacity Utilization 41.7%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 3: Urbandale Plaza & Spratt Road



3: Urbandale Plaza & Spratt Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
PM Peak Hour (Coordinated)



|                        |     |
|------------------------|-----|
| Lane Group             | SBR |
| LOS                    |     |
| Approach Delay         |     |
| Approach LOS           |     |
| Queue Length 50th (m)  |     |
| Queue Length 95th (m)  |     |
| Internal Link Dist (m) |     |
| Turn Bay Length (m)    |     |
| Base Capacity (vph)    |     |
| Starvation Cap Reductn |     |
| Spillback Cap Reductn  |     |
| Storage Cap Reductn    |     |
| Reduced v/c Ratio      |     |
| Intersection Summary   |     |

4: Limebank Road & Realigned Leitrim Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
PM Peak Hour (Coordinated)

|                         |                                                                                    |                                                                                    |  |                                                                                    |                                                                                    |  |  |                                                                                      |  |  |                                                                                      |  |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                                                                                                                 | EBT                                                                                                                                                                 | EBR                                                                               | WBL                                                                                                                                                                 | WBT                                                                                                                                                                 | WBR                                                                               | NBL                                                                                | NBT                                                                                                                                                                     | NBR                                                                                 | SBL                                                                                 | SBT                                                                                                                                                                     | SBR                                                                                 |
| Lane Configurations     |   |   |                                                                                   |   |   |                                                                                   |  |   |  |  |   |  |
| Traffic Volume (vph)    | 323                                                                                                                                                                 | 0                                                                                                                                                                   | 239                                                                               | 46                                                                                                                                                                  | 0                                                                                                                                                                   | 8                                                                                 | 60                                                                                 | 644                                                                                                                                                                     | 0                                                                                   | 56                                                                                  | 1675                                                                                                                                                                    | 80                                                                                  |
| Future Volume (vph)     | 323                                                                                                                                                                 | 0                                                                                                                                                                   | 239                                                                               | 46                                                                                                                                                                  | 0                                                                                                                                                                   | 8                                                                                 | 60                                                                                 | 644                                                                                                                                                                     | 0                                                                                   | 56                                                                                  | 1675                                                                                                                                                                    | 80                                                                                  |
| Ideal Flow (vphpl)      | 1800                                                                                                                                                                | 1800                                                                                                                                                                | 1800                                                                              | 1800                                                                                                                                                                | 1800                                                                                                                                                                | 1800                                                                              | 1800                                                                               | 1800                                                                                                                                                                    | 1800                                                                                | 1800                                                                                | 1800                                                                                                                                                                    | 1800                                                                                |
| Storage Length (m)      | 90.0                                                                                                                                                                |                                                                                                                                                                     | 0.0                                                                               | 125.0                                                                                                                                                               |                                                                                                                                                                     | 0.0                                                                               | 90.0                                                                               |                                                                                                                                                                         | 160.0                                                                               | 90.0                                                                                |                                                                                                                                                                         | 0.0                                                                                 |
| Storage Lanes           | 2                                                                                                                                                                   |                                                                                                                                                                     | 0                                                                                 | 2                                                                                                                                                                   |                                                                                                                                                                     | 0                                                                                 | 1                                                                                  |                                                                                                                                                                         | 1                                                                                   | 1                                                                                   |                                                                                                                                                                         | 0                                                                                   |
| Taper Length (m)        | 7.6                                                                                                                                                                 |                                                                                                                                                                     |                                                                                   | 2.5                                                                                                                                                                 |                                                                                                                                                                     |                                                                                   | 7.6                                                                                |                                                                                                                                                                         |                                                                                     | 7.6                                                                                 |                                                                                                                                                                         |                                                                                     |
| Lane Util. Factor       | 0.97                                                                                                                                                                | 0.95                                                                                                                                                                | 0.95                                                                              | 0.97                                                                                                                                                                | 0.95                                                                                                                                                                | 0.95                                                                              | 1.00                                                                               | 0.95                                                                                                                                                                    | 1.00                                                                                | 1.00                                                                                | 0.95                                                                                                                                                                    | 0.95                                                                                |
| Frt                     |                                                                                                                                                                     | 0.850                                                                                                                                                               |                                                                                   |                                                                                                                                                                     | 0.850                                                                                                                                                               |                                                                                   |                                                                                    |                                                                                                                                                                         |                                                                                     |                                                                                     | 0.993                                                                                                                                                                   |                                                                                     |
| Flt Protected           | 0.950                                                                                                                                                               |                                                                                                                                                                     |                                                                                   | 0.950                                                                                                                                                               |                                                                                                                                                                     |                                                                                   | 0.950                                                                              |                                                                                                                                                                         |                                                                                     | 0.950                                                                               |                                                                                                                                                                         |                                                                                     |
| Satd. Flow (prot)       | 2995                                                                                                                                                                | 2624                                                                                                                                                                | 0                                                                                 | 3354                                                                                                                                                                | 2939                                                                                                                                                                | 0                                                                                 | 1544                                                                               | 3262                                                                                                                                                                    | 1820                                                                                | 1729                                                                                | 3383                                                                                                                                                                    | 0                                                                                   |
| Flt Permitted           | 0.950                                                                                                                                                               |                                                                                                                                                                     |                                                                                   | 0.950                                                                                                                                                               |                                                                                                                                                                     |                                                                                   | 0.054                                                                              |                                                                                                                                                                         |                                                                                     | 0.378                                                                               |                                                                                                                                                                         |                                                                                     |
| Satd. Flow (perm)       | 2995                                                                                                                                                                | 2624                                                                                                                                                                | 0                                                                                 | 3354                                                                                                                                                                | 2939                                                                                                                                                                | 0                                                                                 | 88                                                                                 | 3262                                                                                                                                                                    | 1820                                                                                | 688                                                                                 | 3383                                                                                                                                                                    | 0                                                                                   |
| Right Turn on Red       |                                                                                                                                                                     |                                                                                                                                                                     | Yes                                                                               |                                                                                                                                                                     |                                                                                                                                                                     | Yes                                                                               |                                                                                    |                                                                                                                                                                         | Yes                                                                                 |                                                                                     |                                                                                                                                                                         | Yes                                                                                 |
| Satd. Flow (RTOR)       |                                                                                                                                                                     | 162                                                                                                                                                                 |                                                                                   |                                                                                                                                                                     | 206                                                                                                                                                                 |                                                                                   |                                                                                    |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         | 4                                                                                   |
| Link Speed (k/h)        |                                                                                                                                                                     | 60                                                                                                                                                                  |                                                                                   |                                                                                                                                                                     | 60                                                                                                                                                                  |                                                                                   |                                                                                    | 80                                                                                                                                                                      |                                                                                     |                                                                                     |                                                                                                                                                                         | 80                                                                                  |
| Link Distance (m)       |                                                                                                                                                                     | 472.7                                                                                                                                                               |                                                                                   |                                                                                                                                                                     | 426.7                                                                                                                                                               |                                                                                   |                                                                                    | 635.3                                                                                                                                                                   |                                                                                     |                                                                                     |                                                                                                                                                                         | 509.3                                                                               |
| Travel Time (s)         |                                                                                                                                                                     | 28.4                                                                                                                                                                |                                                                                   |                                                                                                                                                                     | 25.6                                                                                                                                                                |                                                                                   |                                                                                    | 28.6                                                                                                                                                                    |                                                                                     |                                                                                     |                                                                                                                                                                         | 22.9                                                                                |
| Peak Hour Factor        | 1.00                                                                                                                                                                | 1.00                                                                                                                                                                | 1.00                                                                              | 1.00                                                                                                                                                                | 1.00                                                                                                                                                                | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                                                                                                    | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                |
| Heavy Vehicles (%)      | 12%                                                                                                                                                                 | 12%                                                                                                                                                                 | 12%                                                                               | 0%                                                                                                                                                                  | 12%                                                                                                                                                                 | 0%                                                                                | 12%                                                                                | 6%                                                                                                                                                                      | 0%                                                                                  | 0%                                                                                  | 1%                                                                                                                                                                      | 12%                                                                                 |
| Adj. Flow (vph)         | 323                                                                                                                                                                 | 0                                                                                                                                                                   | 239                                                                               | 46                                                                                                                                                                  | 0                                                                                                                                                                   | 8                                                                                 | 60                                                                                 | 644                                                                                                                                                                     | 0                                                                                   | 56                                                                                  | 1675                                                                                                                                                                    | 80                                                                                  |
| Shared Lane Traffic (%) |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                   |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                   |                                                                                    |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Lane Group Flow (vph)   | 323                                                                                                                                                                 | 239                                                                                                                                                                 | 0                                                                                 | 46                                                                                                                                                                  | 8                                                                                                                                                                   | 0                                                                                 | 60                                                                                 | 644                                                                                                                                                                     | 0                                                                                   | 56                                                                                  | 1755                                                                                                                                                                    | 0                                                                                   |
| Turn Type               | Prot                                                                                                                                                                | NA                                                                                                                                                                  |                                                                                   | Prot                                                                                                                                                                | NA                                                                                                                                                                  |                                                                                   | pm+pt                                                                              | NA                                                                                                                                                                      | Perm                                                                                | pm+pt                                                                               | NA                                                                                                                                                                      |                                                                                     |
| Protected Phases        | 7                                                                                                                                                                   | 4                                                                                                                                                                   |                                                                                   | 3                                                                                                                                                                   | 8                                                                                                                                                                   |                                                                                   | 5                                                                                  | 2                                                                                                                                                                       |                                                                                     | 1                                                                                   | 6                                                                                                                                                                       |                                                                                     |
| Permitted Phases        |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                   |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                   | 2                                                                                  |                                                                                                                                                                         | 2                                                                                   | 6                                                                                   |                                                                                                                                                                         |                                                                                     |
| Detector Phase          | 7                                                                                                                                                                   | 4                                                                                                                                                                   |                                                                                   | 3                                                                                                                                                                   | 8                                                                                                                                                                   |                                                                                   | 5                                                                                  | 2                                                                                                                                                                       | 2                                                                                   | 1                                                                                   | 6                                                                                                                                                                       |                                                                                     |
| Switch Phase            |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                   |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                   |                                                                                    |                                                                                                                                                                         |                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                     |
| Minimum Initial (s)     | 5.0                                                                                                                                                                 | 10.0                                                                                                                                                                |                                                                                   | 5.0                                                                                                                                                                 | 10.0                                                                                                                                                                |                                                                                   | 5.0                                                                                | 10.0                                                                                                                                                                    | 10.0                                                                                | 5.0                                                                                 | 10.0                                                                                                                                                                    |                                                                                     |
| Minimum Split (s)       | 12.5                                                                                                                                                                | 43.6                                                                                                                                                                |                                                                                   | 12.5                                                                                                                                                                | 43.6                                                                                                                                                                |                                                                                   | 12.4                                                                               | 39.3                                                                                                                                                                    | 39.3                                                                                | 12.4                                                                                | 39.3                                                                                                                                                                    |                                                                                     |
| Total Split (s)         | 13.0                                                                                                                                                                | 44.0                                                                                                                                                                |                                                                                   | 13.0                                                                                                                                                                | 44.0                                                                                                                                                                |                                                                                   | 13.0                                                                               | 60.0                                                                                                                                                                    | 60.0                                                                                | 13.0                                                                                | 60.0                                                                                                                                                                    |                                                                                     |
| Total Split (%)         | 10.0%                                                                                                                                                               | 33.8%                                                                                                                                                               |                                                                                   | 10.0%                                                                                                                                                               | 33.8%                                                                                                                                                               |                                                                                   | 10.0%                                                                              | 46.2%                                                                                                                                                                   | 46.2%                                                                               | 10.0%                                                                               | 46.2%                                                                                                                                                                   |                                                                                     |
| Maximum Green (s)       | 5.5                                                                                                                                                                 | 36.5                                                                                                                                                                |                                                                                   | 5.5                                                                                                                                                                 | 36.5                                                                                                                                                                |                                                                                   | 5.6                                                                                | 52.6                                                                                                                                                                    | 52.6                                                                                | 5.6                                                                                 | 52.6                                                                                                                                                                    |                                                                                     |
| Yellow Time (s)         | 4.1                                                                                                                                                                 | 4.1                                                                                                                                                                 |                                                                                   | 4.1                                                                                                                                                                 | 4.1                                                                                                                                                                 |                                                                                   | 5.0                                                                                | 5.0                                                                                                                                                                     | 5.0                                                                                 | 5.0                                                                                 | 5.0                                                                                                                                                                     |                                                                                     |
| All-Red Time (s)        | 3.4                                                                                                                                                                 | 3.4                                                                                                                                                                 |                                                                                   | 3.4                                                                                                                                                                 | 3.4                                                                                                                                                                 |                                                                                   | 2.4                                                                                | 2.4                                                                                                                                                                     | 2.4                                                                                 | 2.4                                                                                 | 2.4                                                                                                                                                                     |                                                                                     |
| Lost Time Adjust (s)    | 0.0                                                                                                                                                                 | 0.0                                                                                                                                                                 |                                                                                   | 0.0                                                                                                                                                                 | 0.0                                                                                                                                                                 |                                                                                   | 0.0                                                                                | 0.0                                                                                                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                                                                                                     |                                                                                     |
| Total Lost Time (s)     | 7.5                                                                                                                                                                 | 7.5                                                                                                                                                                 |                                                                                   | 7.5                                                                                                                                                                 | 7.5                                                                                                                                                                 |                                                                                   | 7.4                                                                                | 7.4                                                                                                                                                                     | 7.4                                                                                 | 7.4                                                                                 | 7.4                                                                                                                                                                     |                                                                                     |
| Lead/Lag                | Lead                                                                                                                                                                | Lag                                                                                                                                                                 |                                                                                   | Lead                                                                                                                                                                | Lag                                                                                                                                                                 |                                                                                   | Lead                                                                               | Lag                                                                                                                                                                     | Lag                                                                                 | Lead                                                                                | Lag                                                                                                                                                                     |                                                                                     |
| Lead-Lag Optimize?      | Yes                                                                                                                                                                 | Yes                                                                                                                                                                 |                                                                                   | Yes                                                                                                                                                                 | Yes                                                                                                                                                                 |                                                                                   | Yes                                                                                | Yes                                                                                                                                                                     | Yes                                                                                 | Yes                                                                                 | Yes                                                                                                                                                                     |                                                                                     |
| Vehicle Extension (s)   | 3.0                                                                                                                                                                 | 3.0                                                                                                                                                                 |                                                                                   | 3.0                                                                                                                                                                 | 3.0                                                                                                                                                                 |                                                                                   | 3.0                                                                                | 3.0                                                                                                                                                                     | 3.0                                                                                 | 3.0                                                                                 | 3.0                                                                                                                                                                     |                                                                                     |
| Recall Mode             | None                                                                                                                                                                | None                                                                                                                                                                |                                                                                   | None                                                                                                                                                                | None                                                                                                                                                                |                                                                                   | None                                                                               | C-Min                                                                                                                                                                   | C-Min                                                                               | None                                                                                | C-Min                                                                                                                                                                   |                                                                                     |
| Walk Time (s)           |                                                                                                                                                                     | 7.0                                                                                                                                                                 |                                                                                   |                                                                                                                                                                     | 7.0                                                                                                                                                                 |                                                                                   |                                                                                    | 7.0                                                                                                                                                                     | 7.0                                                                                 |                                                                                     | 7.0                                                                                                                                                                     |                                                                                     |
| Flash Dont Walk (s)     |                                                                                                                                                                     | 29.1                                                                                                                                                                |                                                                                   |                                                                                                                                                                     | 29.1                                                                                                                                                                |                                                                                   |                                                                                    | 24.9                                                                                                                                                                    | 24.9                                                                                |                                                                                     | 24.9                                                                                                                                                                    |                                                                                     |
| Pedestrian Calls (#/hr) |                                                                                                                                                                     | 0                                                                                                                                                                   |                                                                                   |                                                                                                                                                                     | 0                                                                                                                                                                   |                                                                                   |                                                                                    | 0                                                                                                                                                                       | 0                                                                                   |                                                                                     | 0                                                                                                                                                                       |                                                                                     |
| Act Effect Green (s)    | 17.2                                                                                                                                                                | 11.3                                                                                                                                                                |                                                                                   | 5.5                                                                                                                                                                 | 11.0                                                                                                                                                                |                                                                                   | 87.7                                                                               | 81.8                                                                                                                                                                    |                                                                                     | 87.2                                                                                | 81.5                                                                                                                                                                    |                                                                                     |
| Actuated g/C Ratio      | 0.13                                                                                                                                                                | 0.09                                                                                                                                                                |                                                                                   | 0.04                                                                                                                                                                | 0.08                                                                                                                                                                |                                                                                   | 0.67                                                                               | 0.63                                                                                                                                                                    |                                                                                     | 0.67                                                                                | 0.63                                                                                                                                                                    |                                                                                     |
| v/c Ratio               | 0.81                                                                                                                                                                | 0.90dr                                                                                                                                                              |                                                                                   | 0.33                                                                                                                                                                | 0.02                                                                                                                                                                |                                                                                   | 0.43                                                                               | 0.31                                                                                                                                                                    |                                                                                     | 0.11                                                                                | 0.83                                                                                                                                                                    |                                                                                     |
| Control Delay           | 70.0                                                                                                                                                                | 27.3                                                                                                                                                                |                                                                                   | 66.9                                                                                                                                                                | 0.1                                                                                                                                                                 |                                                                                   | 29.1                                                                               | 9.7                                                                                                                                                                     |                                                                                     | 6.7                                                                                 | 19.6                                                                                                                                                                    |                                                                                     |
| Queue Delay             | 0.0                                                                                                                                                                 | 0.0                                                                                                                                                                 |                                                                                   | 0.0                                                                                                                                                                 | 0.0                                                                                                                                                                 |                                                                                   | 0.0                                                                                | 0.0                                                                                                                                                                     |                                                                                     | 0.0                                                                                 | 0.0                                                                                                                                                                     |                                                                                     |

4: Limebank Road & Realigned Leitrim Road  
Riverside South Employment Lands & Blocks 13, 14

Future (2031) Total Traffic  
PM Peak Hour (Coordinated)

|                        |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Total Delay            | 70.0                                                                              | 27.3                                                                              |                                                                                   | 66.9                                                                              | 0.1                                                                               |                                                                                   | 29.1                                                                               | 9.7                                                                                 |                                                                                     | 6.7                                                                                 | 19.6                                                                                |                                                                                     |
| LOS                    | E                                                                                 | C                                                                                 |                                                                                   | E                                                                                 | A                                                                                 |                                                                                   | C                                                                                  | A                                                                                   |                                                                                     | A                                                                                   | B                                                                                   |                                                                                     |
| Approach Delay         |                                                                                   | 51.8                                                                              |                                                                                   |                                                                                   | 57.0                                                                              |                                                                                   |                                                                                    | 11.3                                                                                |                                                                                     |                                                                                     | 19.2                                                                                |                                                                                     |
| Approach LOS           |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                    | B                                                                                   |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |
| Queue Length 50th (m)  | 39.7                                                                              | 10.0                                                                              |                                                                                   | 6.0                                                                               | 0.0                                                                               |                                                                                   | 5.3                                                                                | 28.1                                                                                |                                                                                     | 2.2                                                                                 | 189.5                                                                               |                                                                                     |
| Queue Length 95th (m)  | #100.8                                                                            | 22.9                                                                              |                                                                                   | 12.6                                                                              | 0.0                                                                               |                                                                                   | m13.3                                                                              | 39.3                                                                                |                                                                                     | m5.5                                                                                | #270.7                                                                              |                                                                                     |
| Internal Link Dist (m) |                                                                                   | 448.7                                                                             |                                                                                   |                                                                                   | 402.7                                                                             |                                                                                   |                                                                                    | 611.3                                                                               |                                                                                     |                                                                                     | 485.3                                                                               |                                                                                     |
| Turn Bay Length (m)    | 90.0                                                                              |                                                                                   |                                                                                   | 125.0                                                                             |                                                                                   |                                                                                   | 90.0                                                                               |                                                                                     |                                                                                     | 90.0                                                                                |                                                                                     |                                                                                     |
| Base Capacity (vph)    | 397                                                                               | 853                                                                               |                                                                                   | 141                                                                               | 973                                                                               |                                                                                   | 138                                                                                | 2052                                                                                |                                                                                     | 515                                                                                 | 2122                                                                                |                                                                                     |
| Starvation Cap Reductn | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn  | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn    | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                  | 0                                                                                   |                                                                                     | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio      | 0.81                                                                              | 0.28                                                                              |                                                                                   | 0.33                                                                              | 0.01                                                                              |                                                                                   | 0.43                                                                               | 0.31                                                                                |                                                                                     | 0.11                                                                                | 0.83                                                                                |                                                                                     |

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 20 (15%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 24.0

Intersection LOS: C

Intersection Capacity Utilization 85.8%

ICU Level of Service E

Analysis Period (min) 15

# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 4: Limebank Road & Realigned Leitrim Road

