Transportation Impact Assessment – Step 4: Analysis

140 Lusk Street

ARCADIS
IBI GROUP

Prepared for Troms Holdings Corp.
by Arcadis IBI Group
December 6, 2022

Document Control Page

CLIENT:	Troms Holdings Corp.
PROJECT NAME:	140 Lusk Street
REPORT TITLE:	Transportation Impact Assessment
IBI REFERENCE:	140895
VERSION:	1.0 Submission
DIGITAL MASTER:	140895 140 Lusk St. - Internal Documents\6.0_Technical\6.23_Traffic\03_Reports\TTR_140_lusk_st_TIA_MASTER_2022-10-04.docx
ORIGINATOR:	Ben Pascolo-Neveu/Isabel Loewen
REVIEWER:	David Hook
AUTHORIZATION:	David Hook
CIRCULATION LIST:	Josiane Gervais - City of Ottawa Transportation Project Manager
HISTORY:	1.0 – TIA Steps 1,2 & 3 Submitted for City Review – October 12, 2022 2.0 – TIA Step 4 Submitted for Client Review – December 6, 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[1] or registered[1] professional in good standing, whose field of expertise [check √ appropriate field(s)] is either transportation engineering □ or transportation planning □.

[1] **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 6th day of December, 2022.
(City)

Name: Ben Pascolo-Neveu, P.Eng.

Professional Title: Project Engineer

Ben Pascolo-Neveu

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

Office Contact Information (Please Print)
Address: 400-333 Preston Street
City / Postal Code: K1S 5N4
Telephone / Extension: 613-225-1311 ext. 64074
E-Mail Address: ben.pascolo-neveu@ibigroup.com

Stamp

Table of Contents

Executive Summary **6**

1 Introduction **1**

2 TIA Screening **2**

3 Project Scoping **2**

3.1 Description of Proposed Development 2

3.1.1 Site Location 2

3.1.2 Land Use Details 4

3.1.3 Development Phasing & Date of Occupancy 4

3.2 Existing Conditions 6

3.2.1 Existing Road Network 6

3.2.2 Existing Bicycle and Pedestrian Facilities 7

3.2.3 Existing Transit Facilities and Service 8

3.2.4 Collision History 8

3.3 Planned Conditions 9

3.3.1 Transportation Network 9

3.3.2 Future Adjacent Developments 11

3.3.3 Network Concept Screenline 14

3.4 Study Area 14

3.5 Time Periods 14

3.6 Existing Lane Configurations and Traffic Volumes 15

3.6.1 Existing Lane Configurations 15

3.6.2 Existing Traffic Volumes 15

3.7 Study Horizon Year 18

3.8 Exemptions Review 18

4 Forecasting **19**

4.1 Demand Rationalization 19

4.1.1 Description of Capacity Issues 19

Table of Contents

4.1.2 Adjustment to Development Generated Demands 19
4.1.3 Adjustment to Background Network Demands 20
4.2 Development Generated Traffic 20
4.2.1 Trip Generation Methodology 20
4.2.2 Trip Generation Results 21
4.2.3 Trip Distribution and Assignment 24
4.3 Background Network Traffic 26
4.3.1 Changes to the Background Transportation Network 26
4.3.2 General Background Growth Rates 26
4.3.3 Other Area Development 26
4.4 Traffic Volume Summary 27
4.4.1 Future Background Traffic Volumes 27
4.4.2 Future Total Traffic Volumes 28

5 Analysis 33
5.1 Development Design 33
5.1.1 Design for Sustainable Modes 33
5.1.2 Circulation and Access 33
5.1.3 New Street Networks 33
5.2 Parking 33
5.2.1 Parking Supply 33
5.2.2 Spillover Parking 34
5.3 Boundary Streets 34
5.3.1 Mobility 34
5.3.2 Road Safety 34
5.4 Access Intersections 35
5.4.1 Location and Design of Access 35
5.4.2 Access Intersection Control 35
5.4.3 Intersection Design (MMLOS) 35
5.5 Transportation Demand Management (TDM) Program 36

Table of Contents

5.6 Neighbourhood Traffic Management 36
5.6.1 Adjacent Neighbourhoods 36
5.7 Transit 36
5.7.1 Route Capacity 36
5.7.1 Transit Priority Measures 36
5.8 Review of Network Concept 37
5.9 Intersection Design 37
5.9.1 Intersection Control 37
5.9.2 Intersection Analysis Criteria (Automobile) 38
5.9.3 Intersection Capacity Analysis 38
5.9.4 Intersection Design (MMLOS) 40
5.10 Geometric Review 42
Sight Distance and Corner Clearances 42
5.10.2 Auxiliary Lane Analyses 42
5.11 Summary of Improvements Indicated and Modification Options 45
5.11.1 Fallowfield Road & O'Keefe Court/Cobble Hill Drive 45
5.11.2 O'Keefe Court & Lusk Street 45
5.11.3 Fallowfield Road & Forager Street 45

6 Conclusion 46

Table of Contents

List of Tables

Table 1 - Land Use Statistics 4
Table 2 - Reported Collisions within Vicinity of Proposed Development 8
Table 3 - Future Adjacent Developments 12
Table 4 - Exemptions Review 18
Table 5 - Intersection Capacity Analysis: Existing Traffic 19
Table 6 - Base Vehicular Trip Generation Results 21
Table 7 - Person-Trip Generation 21
Table 8 - 2011 O-D Survey Mode Shares and Proposed Mode Share Targets 22
Table 9 - Peak Hour Person Trips by Mode 23
Table 10 - Cumulative 4401 Fallowfield Road Trip Generation 23
Table 11 - Adjacent Development Vehicle Trip Generation 27
Table 12 – Segment-based MMLOS Results 34
Table 13 - Development Generated Transit Demand 36
Table 14 - LOS Criteria for Signalized and Unsignalized Intersections 38
Table 15 - Intersection Capacity Analysis: 2023 Background Traffic 39
Table 16 - Intersection Capacity Analysis: 2028 Background Traffic 39
Table 17 - Intersection Capacity Analysis: 2023 Total Traffic 40
Table 18 - Intersection Capacity Analysis: 2028 Total Traffic 40
Table 19 - Intersection MMLOS - Future Conditions 41
Table 20 - Auxiliary Left-Turn Storage Analysis at Signalized Intersections 43
Table 21 – Auxiliary Right-Turn Lane Storage Analysis at Signalized Intersections 44

List of Figures

Figure 1 - Fallowfield Road & O'Keefe Court / Cobble Hill Drive intersection 7
Figure 2 - Fallowfield Road & Forager Street 7
Figure 3 - Future Road Network Projects 9
Figure 4 - Ultimate Cycling Network 11

Table of Contents

Figure 5 - 2023 TMP Draft Active Transportation Project List 11
Figure 6 – South Nepean TAZ 20

List of Exhibits

Exhibit 1 - Site Location 3
Exhibit 2 - Proposed Development 5
Exhibit 3 - Adjacent Developments 13
Exhibit 4 – Existing (2022) Lane Configurations and Intersection Controls 16
Exhibit 5 – Existing (2022) Traffic Volumes 17
Exhibit 6 - Site Generated AM & PM Peak Hour Traffic Volumes 25
Exhibit 7 - Future (2023) Background Traffic 29
Exhibit 8 - Future (2028) Background Traffic 30
Exhibit 9 - Future (2023) Total Traffic 31
Exhibit 10 - Future (2028) Total Traffic 32

List of Appendices

Appendix A – Screening Form
Appendix B – Proposed Development Site Plan
Appendix C – OC Transpo Routes
Appendix D – Collision Data
Appendix E – Traffic Count Data
Appendix F – Intersection Capacity Analyses
Appendix G – Trip Generation Data
Appendix H – TDM Checklists
Appendix I – AutoTURN Analysis
Appendix J – MMLOS Analysis
Appendix K – Intersection Control Warrants
Appendix L – Auxiliary Lane Analyses

Executive Summary

Arcadis IBI Group (IBI) was retained by Troms Holdings Corp. to undertake a Transportation Impact Assessment (TIA) in support of a Site Plan Control application for a proposed hotel development to be located at 140 Lusk Street, Ottawa. The development represents a parcel of land in the original 4401 Fallowfield Road Plan of Subdivision.

The subject property is presently an undeveloped, greenfield site located at 140 Lusk Street and is within the 4401 Fallowfield Road business park. The site occupies approximately 0.52 hectares and is generally bound by O'Keefe Court to the north, Lusk Street to the south and undeveloped lands to the east and west.

The proposed hotel at 140 Lusk Street is expected to generate up to 36 and 45 two-way vehicular trips during the weekday morning and afternoon peak hours, respectively, and represent a marginal increase in volumes on the adjacent road network. The mode share targets were developed based on the South Nepean Traffic Assessment Zone (TAZ) and proportionally adjusted, in accordance with the Conditions of Approval for 4401 Fallowfield Road, to yield an 85% auto/15% non-auto mode share split.

Fallowfield & O'Keefe/Cobble Hill is presently operating as a two-way stop-controlled intersection. The results of the analysis indicate that, by 2023, traffic signals will be operationally required under background traffic conditions, however signals are not warranted within the timeframe of this study. With traffic signals in place, the intersection would be expected to operate at LOS 'B' beyond the 2028 study horizon year. If traffic signals are not implemented by the study horizon year, delays of at least 3 minutes are expected at the Fallowfield & O'Keefe intersection with or without the inclusion of site-generated traffic. As site-generated traffic will not contribute significantly to any potential traffic operational issues at this intersection, it is recommended that the City continue monitoring this location on an annual basis to determine the appropriate timing for the introduction of traffic signals.

The results of the analysis indicate that the intersections of O'Keefe Court & Lusk Street and Fallowfield Road & Forager Street are expected to operate within acceptable standards (LOS 'D' or better) during the weekday morning and afternoon peak hours. Both are T-intersections that are configured with stop control on the minor road and are not expected to require additional auxiliary lanes or future modifications within the timeframe of this study.

A multi-modal analysis identified deficiencies in the existing road network and potential remediation measures have been suggested which the City could consider to meet these prescribed targets. It should be noted that, although these measures would provide improvements for a range of transportation modes, they are not required to safely accommodate the transportation demands of the proposed development.

Roadway modifications (RMA-2019-TPD-041B) were recently implemented to satisfy a conditional requirement for the Subdivision and are now complete. This RMA included a right-in/right-out intersection at Fallowfield & Forager and a multi-use path along the west side of Fallowfield Road between O'Keefe Court to just south of Forager Street. It is understood that the southbound bus stop originally proposed as part of this RMA has been deferred until traffic signals are implemented at the Fallowfield & O'Keefe/Cobble Hill intersection.

All study area intersections were shown to operate well within the capacity constraints of the adjacent transportation network, with the appropriate modifications in place (i.e. signalization of Fallowfield & O'Keefe/Cobble Hill by 2023). Further, the proposed development will contribute a nominal increase in traffic on the adjacent road network. A post-development Monitoring Plan is, therefore, not a requirement of this study.

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

1 Introduction

Arcadis IBI Group (IBI) was retained by Troms Holdings Corp. to undertake a Transportation Impact Assessment (TIA) in support of a Site Plan Control application for a proposed hotel development to be located at 140 Lusk Street, Ottawa. The development represents a parcel of land in the original 4401 Fallowfield Road Plan of Subdivision.

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 typically submitted in draft form to the City of Ottawa and undergo a review by a designated Transportation Project Manager (TPM). Any comments received are addressed to the satisfaction of the City's Transportation Project Manager before proceeding with subsequent components of the study. Based on email correspondence with the City TPM, dated October 7th, 2022, it was confirmed that a joint Screening, Scoping and Forecasting report would suffice for this study as a result of similarities between the subject site and the neighbouring property at 135 Lusk Street, for which a TIA was recently conducted.

Roadway modifications proposed as part of RMA-2019-TPD-041B were recently implemented to satisfy a conditional requirement for the Subdivision and are now considered complete. This RMA included a right-in/right-out intersection at Fallowfield Road & Forager Street and a multi-use pathway along the west side of Fallowfield Road. It is understood that the southbound bus stop originally proposed as part of this RMA has been deferred until traffic signals are implemented at the Fallowfield & O'Keefe/Cobble Hill intersection. The need for additional off-site road modifications or a post-development Monitoring Plan to track performance of the planned TIA Strategy will be confirmed through the analysis undertaken in this study.

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**: Preliminary trip generation estimates were developed based on the Institute of Transportation Engineers (ITE) Trip Generation Manual (11th Edition). A 1.28 person-trip conversion factor was applied to the base trip generation data to obtain person-trip generation. The 60 person-trip threshold prescribed by the TIA Guidelines is met during the weekday afternoon peak hour, therefore the Trip Generation trigger is satisfied.
- **Location**: The proposed development will not be accessed from a boundary street that is designated as part of the City's Transit Priority, Rapid Transit network or Spine Bicycle Networks, nor is the subject site within a Design Priority Area or Transit-Oriented Development zone. As such, the Location trigger is not satisfied.
- **Safety**: Boundary street conditions were reviewed to determine if there is an elevated potential for safety concerns adjacent the site. Based on this review, there is no elevated potential for safety concerns adjacent to the site, therefore the Safety trigger is not satisfied.

As the proposed development meets the Trip Generation trigger, the need to undertake a Transportation Impact Assessment is confirmed.

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

3 Project Scoping

3.1 Description of Proposed Development

3.1.1 Site Location

The subject property is presently an undeveloped, greenfield site located at 140 Lusk Street and is within the 4401 Fallowfield Road business park. The site occupies approximately 0.52 hectares and is generally bound by O'Keefe Court to the north, Lusk Street to the south and undeveloped lands to the east and west.

Based on GeoOttawa, the property is zoned IP[2265] H(12) – Business Park Industrial Zone.

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

ARCADIS
IBI GROUP

140 Lusk Street
Transportation Impact
Assessment

Exhibit 1:
Site Location

PROJECT No. 140895

SCALE: 0m 125m 250m

3.1.2 Land Use Details

Table 1 summarizes the proposed land uses included in this development.

Table 1 - Land Use Statistics

LAND USE	SIZE
Hotel	88 rooms

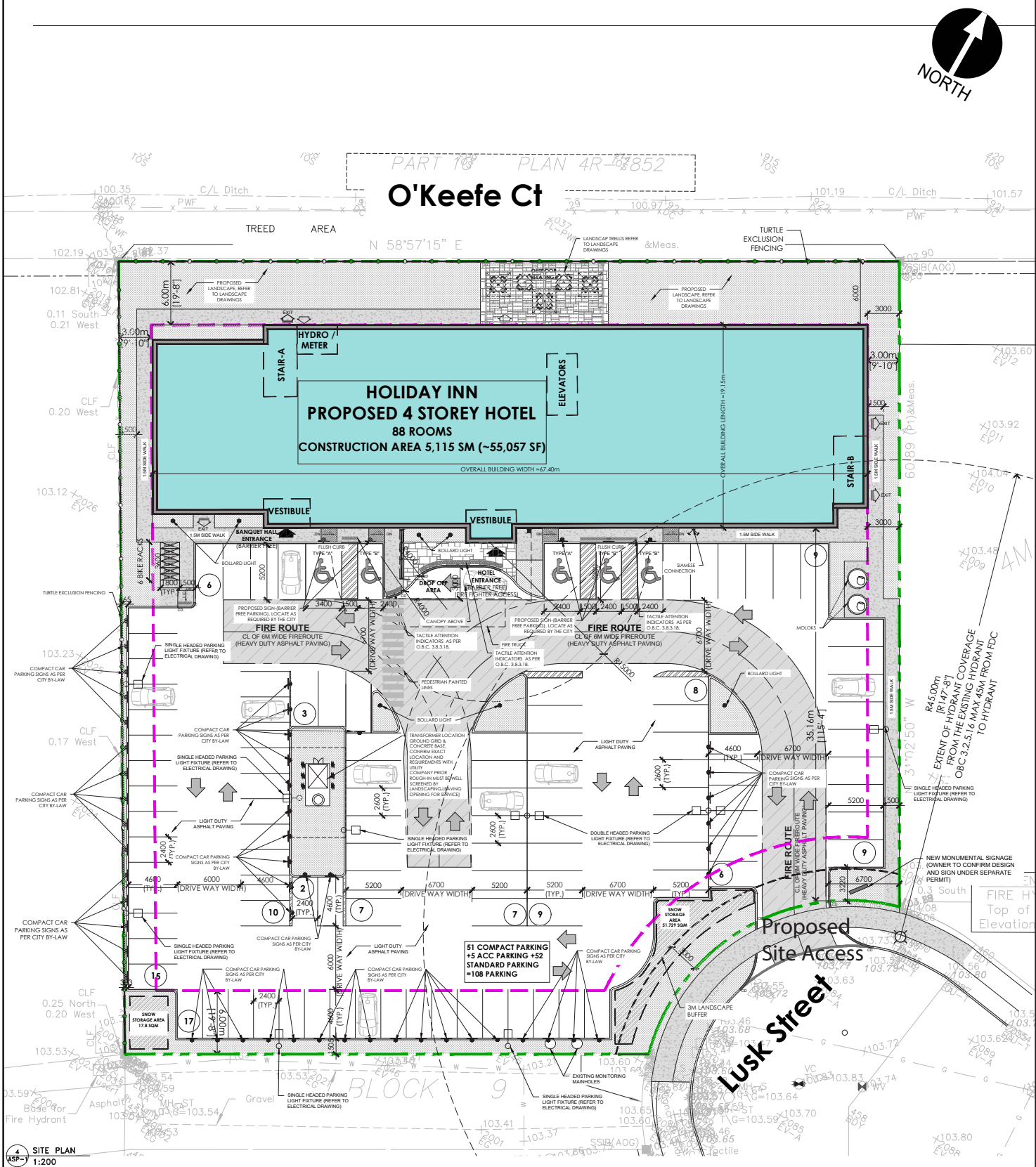
The proposed development is illustrated in **Exhibit 2** below and the full site plan can be found in **Appendix B**.

The site will be accessed via a single all-movement private approach with a direct connection to Lusk Street.

With regards to parking, a total of 108 vehicle spaces are proposed within the on-site surface parking lot, along with 6 bike parking spaces near the principal building entrance.

3.1.3 Development Phasing & Date of Occupancy

It is anticipated that the proposed development will be constructed and fully occupied in a single phase by 2023.



ARCADIS
IBI GROUP

140 Lusk Street
Transportation Impact
Assessment

Exhibit 2:
Proposed
Development

PROJECT No. 140895

SCALE: N.T.S.

3.2 Existing Conditions

3.2.1 Existing Road Network

3.2.1.1 Roadways

The proposed development is bound by the following street(s):

- **Lusk Street** is a two-lane local road under the jurisdiction of the City of Ottawa, extending from O'Keefe Court and terminates in a cul-de-sac approximately 250m to the southwest. Lusk Street has a 20m right-of-way, an unposted speed limit of 50 km/h and provides access to the 4401 Fallowfield Road business park.
- **O'Keefe Court** is a two-lane local road under the jurisdiction of the City of Ottawa, extending west from Fallowfield Road and terminating in a cul-de-sac approximately 800m west of the Fallowfield & O'Keefe intersection. The roadway has a rural cross-section with a posted speed limit of 50km/h. O'Keefe Court extends along the former Fallowfield Road alignment (prior to its realignment to Strandherd Drive). Its right-of-way (ROW) therefore varies and is generally 30m, however, additional ROW has been taken on a portion of the north side to accommodate a multi-use path.

Other streets within the vicinity of the proposed development are as follows:

- **Fallowfield Road** is a two-lane, undivided rural arterial roadway under the jurisdiction of the City of Ottawa with a right-of-way protection of 44.5m. Between Highway 416 and Strandherd Drive, Fallowfield Road has a posted speed of 80km/h, prior to taking a 90-degree turn to the northeast and continuing through to the context area with a reduced speed limit of 60 km/h.
- **Forager Street** is a two-lane local road under the jurisdiction of the City of Ottawa, linking Lusk Street to Fallowfield Road and provides access to the 4401 Fallowfield Road business park. Forager Street has a 20m right-of-way and an unposted speed limit of 50 km/h.
- **Strandherd Drive** is a four-lane divided urban arterial road under the jurisdiction of the City of Ottawa with a posted speed limit of 80 km/h within the vicinity of the subject lands, and a right-of-way protection of 44.5m.
- **Cedarview Road** is a City of Ottawa roadway under the jurisdiction of the City of Ottawa that extends from Strandherd Drive in the south to Baseline Road in the north. Cedarview Road is a two-lane urban arterial road north of Fallowfield Road, with a 37.5m right-of-way protection. Between Fallowfield Road and Jockvale Road, it is a major collector with a 26m right-of-way. The posted speed limit on Cedarview Road is 60 km/h. South of Strandherd Drive and the VIA Rail corridor, Cedarview Road has been renamed Borrisokane Road and continues south to Barnsdale Road.
- **Foxtail Avenue** is a two-lane local road under the jurisdiction of the City of Ottawa, extending north from O'Keefe Court and provides access for the Orchard Estates residential community. The posted speed limit is 40 km/h.

3.2.1.2 Intersections

The following existing intersections have been identified as having the greatest potential to be impacted by the proposed development:

Fallowfield Road & O'Keefe Court / Cobble Hill Drive presently exists as a four-legged unsignalized intersection with stop-control on the O'Keefe Court and Cobble Hill Drive approaches. Each leg of the intersection is configured with a single through lane and auxiliary left-turn lane. Auxiliary right-turn lanes are provided along Fallowfield Road, while the side streets are configured with shared through-right lanes. The City of Ottawa is currently monitoring this intersection for implementation of traffic signals, once warranted.

Figure 1 - Fallowfield Road & O'Keefe Court / Cobble Hill Drive intersection

Fallowfield Road & Forager Street is a three- legged intersection which has been modified with a raised 'pork chop' island to restrict turning movements to right-in/right-out and incorporate a multi-use pathway (MUP) on the west side of Fallowfield Road between Forager Street and Fallowfield Road. This MUP includes a bi-directional shared cross-ride on the eastbound approach to achieve connectivity across Forager Street. The west leg of the intersection has a single right-turn lane. The north leg of the intersection consists of a single through lane, a shared through-right lane and the beginning taper of a single auxiliary left-turn lane for the intersection to the south within the confines of this intersection. The south leg is comprised of two through lanes.

Figure 2 - Fallowfield Road & Forager Street

3.2.1.3 Traffic Management Measures

There are currently no traffic management or traffic calming measures on the boundary streets within the vicinity of the proposed development.

3.2.1.4 Nearby Driveways

The Hampton Inn and Suites Hotel is located to the east of the subject development and includes two full-movement private approaches on the south side of Lusk Street, with the nearest being approximately 20 metres from the proposed development.

3.2.2 Existing Bicycle and Pedestrian Facilities

The section of Fallowfield Road was recently reconstructed to incorporate a multi-use path on the west side from just south of Forager Street to O'Keefe Court. An east-west multi-use path presently exists along the north side of O'Keefe Court from Lytle Park in the west to Cedarview Road in the east as well. There is a sidewalk connection between these multi-use paths along Forager Street.

With respect to dedicated cycling infrastructure within the context area, a bike pocket exists along Fallowfield Road on the southbound approach to the Fallowfield Road & O'Keefe Court/Cobble Hill Drive intersection. Uni-directional cycle tracks are also provided on both sides of Strandherd Drive from Fallowfield Road to Maravista Drive with cross-rides, two-stage left-turn bike boxes and bicycle signals at key signalized intersections.

3.2.3 Existing Transit Facilities and Service

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

- **Route #272** provides weekday peak period and peak direction service between the Cobble Hill residential development in Barrhaven South and Tunney's Pasture Station and operates on a 10-minute headway. Service is provided from Barrhaven to downtown in the morning peak period and the reverse in the afternoon.

The nearest bus stops to the proposed development are located on Cobble Hill Drive, just east of Fallowfield Road and represent an approximate 450-metre walking distance from the site. It should be noted as well that there is presently no controlled pedestrian crossing of Fallowfield Road to facilitate access to these transit stops from the proposed development.

Another route that passes close to the proposed development is **Route #110** which travels from Fallowfield to Innovation with 30-minute headways along Fallowfield Road. This route is only operated from the stop at the Citigate Drive and CrossKeys Place junction, which is an approximate 700 metre walking distance from the proposed development and does not currently include pedestrian facilities throughout the entire distance. **Routes #99** and **#170** also serve the stop at the Citigate & CrossKeys junction but do not pass any closer to the proposed development.

Transit service maps for the above noted transit 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 2** summarizes all reported collisions between January 1, 2016 and December 31, 2020.

Table 2 - Reported Collisions within Vicinity of Proposed Development

LOCATION	# OF REPORTED COLLISIONS
INTERSECTIONS	
Fallowfield Road & Strandherd Drive	46
Fallowfield Road & O'Keefe Court / Cobble Hill Drive	1
SEGMENTS	
Fallowfield Road – Strandherd Drive to O'Keefe Court / Cobber Hill Drive	1

Based on the collision history summarized above, the Fallowfield Road & Strandherd Drive is the only intersection where the collisions are significant but as it is not within the study area, no further analysis is required.

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

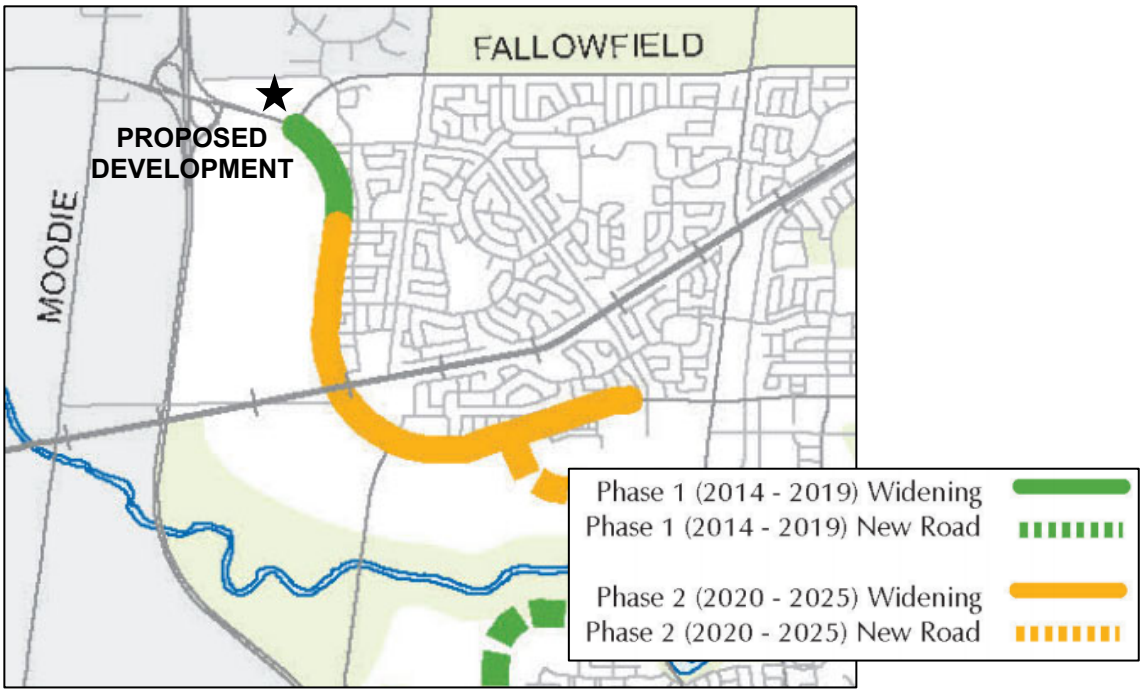
The 2013 Transportation Master Plan (TMP) outlines future road network modifications in the 2031 'Affordable Network'. The following projects were noted that may have an impact on traffic patterns within the vicinity of the site:

- **Strandherd Drive** – Planned widening of Strandherd Drive from two to four lanes. The first phase included widening between Fallowfield Road and Maravista Drive (Phase 1: 2014-2019) and was completed in 2015. The second phase includes widening between Maravista Drive and Jockvale Road (Phase 2: 2020-2025).

Phase 2 of the Strandherd Drive widening is presently under construction and, according to the City's website, is now anticipated to be complete by fall 2023.

Figure 3 below illustrates the planned changes to the arterial road network projects in the broader area, as per the TMP Affordable Plan.

Figure 3 - Future Road Network Projects



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

Although not part of the '2031 Affordable Network', the TMP indicates that Fallowfield Road may be widened between Strandherd Drive and Greenbank Road some time beyond the TMP's 2031 horizon.

3.3.1.2 Future Transit Facilities and Services

The 2013 TMP outlines the future rapid transit and transit priority (RTTP) network. The TMP does not identify any planned RTTP projects within the vicinity of the proposed development as part of the '2031 Affordable Network' or '2031 Network Concept'. The Roadway Modification Application (RMA) completed for the Fallowfield & Forager intersection originally included a new southbound bus stop on Fallowfield Road south of O'Keefe Court, however OC Transpo has deferred the installation of this bus stop until after the intersection becomes signalized.

3.3.1.3 Future Cycling and Pedestrian Facilities

Regarding pedestrian facilities, a 2.0-metre wide concrete sidewalk is planned on the south side of Lusk Street from O'Keefe Court and includes the site's frontage. This sidewalk will connect with a future 3.0-metre wide asphalt pathway proposed along the southern property boundary, shown as Block 9 in **Exhibit 2**, and provide a direct pedestrian link to the western portion of the 4401 Fallowfield Road Subdivision.

Although Fallowfield Road is identified as a 'Spine' cycling route, the Ottawa Cycling Plan (2013) does not describe any planned improvements to bicycle infrastructure along this section of roadway within the study area. The recently constructed multi-use path on the west side of Fallowfield Road provides connectivity from the site to the Fallowfield/O'Keefe Court intersection where a future signalized intersection and bus stops are planned.

A proposed north-south Major Pathway, identified as part of the Ultimate Cycling Network, will connect to the existing multi-use pathway north of O'Keefe Court, continue south through 4401 Fallowfield Road prior to following Highway 416 towards the Jock River. **Figure 4** below shows the future cycling network in the vicinity of the proposed development. The RMA includes a portion of the multi-use pathway on the west side of Fallowfield Road along the 4401 Fallowfield subdivision frontage.

The 2023 TMP Draft Active Transportation Project List includes a multi-use pathway on the west side of Fallowfield Road between Strandherd Drive and Forager Street labelled as the 'Citigate – O'Keefe Pathway' project, shown in **Figure 5**.

Figure 4 - Ultimate Cycling Network

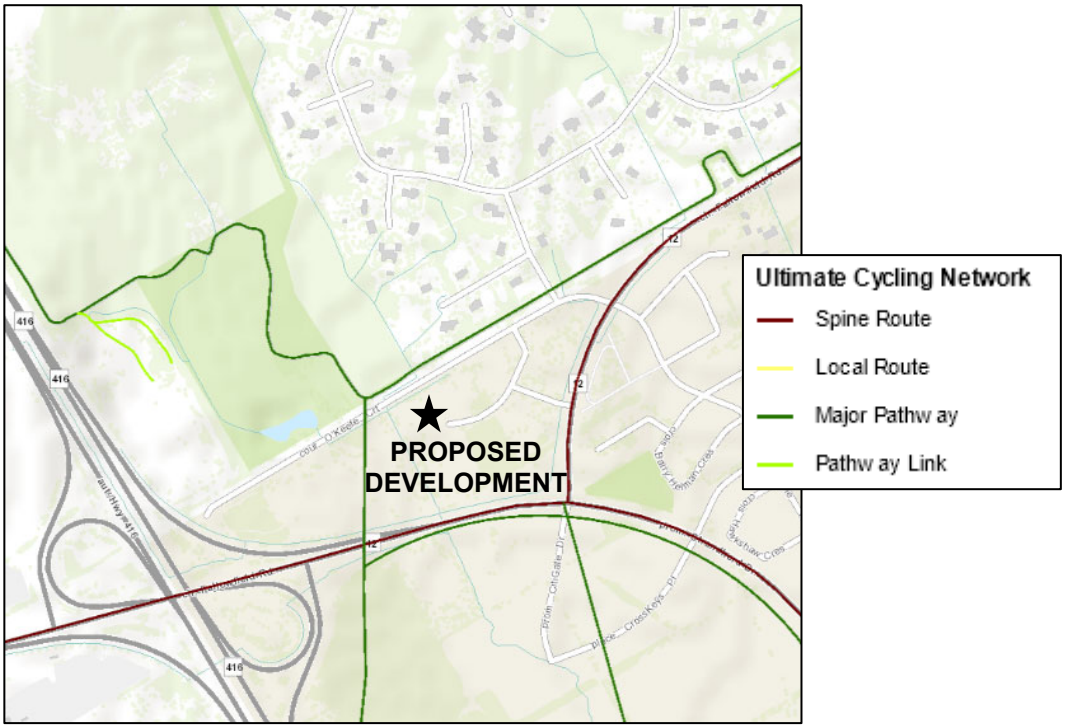


Figure 5 - 2023 TMP Draft Active Transportation Project List

Source: GeoOttawa

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.

The subject site forms part of the 4401 Fallowfield Road Plan of Subdivision (previously referred to as the Highway 416 Lands development). It is located in the northwest quadrant of the Fallowfield Road and Strandherd Drive intersection that will eventually consist of three hotels and an office park.

All current development applications within the context area of the proposed development have been summarized below in **Table 3** below.

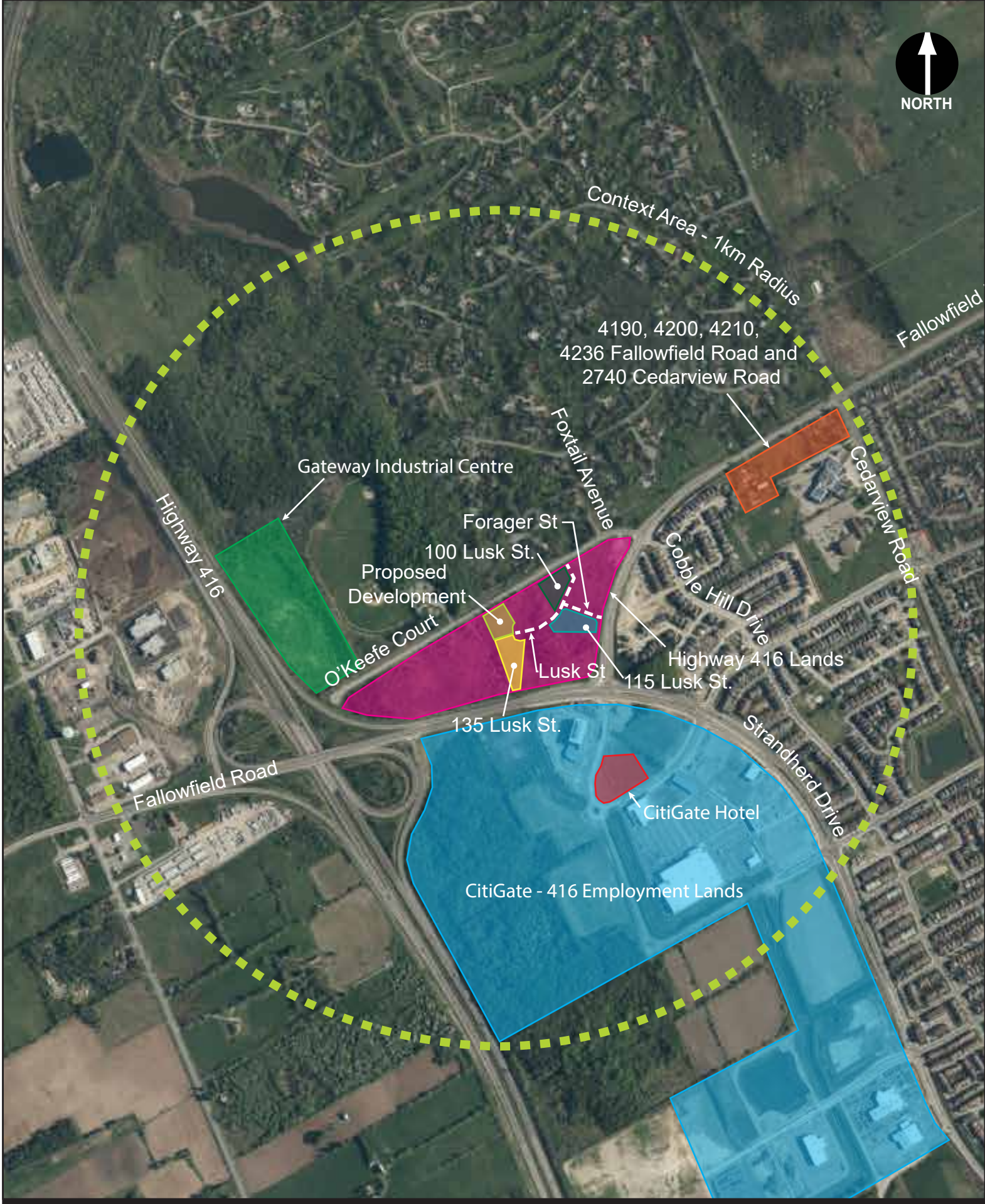
Table 3 - Future Adjacent Developments

DEVELOPMENT	TIA	LAND USE AND SIZE	TARGETED BUILD-OUT1
100 Lusk Street [2]	Stantec (2020)	• ~1,895 m^2 General Office	2021[1]
115 Lusk Street [2]	IBI Group (2021)	• ~280 m^2 Restaurant • ~560 m^2 Medical Office	2023
135 Lusk Street [2]	IBI Group (2021)	• 99 Hotel Rooms	2023
Gateway Industrial Centre (4497 O'Keefe Court)	Delcan (2008)	• ~25,981 m^2 General Light Industrial	Unknown
4190, 4200, 4210, 4236 Fallowfield Road and 2740 Cedarview Road	Novatech (2018)	• 194 Residential Units	2023
CitiGate – 416 Employment Lands	Novatech (2012)	• ~32,526.1m^2 Shopping Centre • 200 Hotel Rooms • Gas Station (8 fuel positions) • ~16.6 ha Business Park • 67.65 ha Office Park • ~10.5 ha New Car Sales	2029
CitiGate Hotel (4433 Strandherd Drive) [3]	Novatech (2019)	• 99 Hotel Rooms	2020[1]

Notes:

1. Occupancy assumed to coincide with full build-out of the proposed development in 2023.
2. Located within the Highway 416 Lands development.
3. Located within the City Gate – 416 Employment Lands development.

The locations of the adjacent developments described above are shown in **Exhibit 3** below.



ARCADIS
IBI GROUP

140 Lusk Street
Transportation Impact
Assessment

Exhibit 3:
Adjacent Developments

PROJECT No. 140895

SCALE: 0m 125m 250m

3.3.3 Network Concept Screenline

Network screenline analysis is not expected to be necessary for this development, as it does not trigger the threshold prescribed in the TIA Guidelines of 200 person-trips or more during the weekday peak hours. Detailed trip generation calculations will be provided in the Forecasting section of the report.

3.4 Study Area

The information presented thus far provides a base level of information for the development's context. Based on preliminary estimates of trip generation completed for the TIA Screening Form, the proposed development is expected to be a low traffic generator with roughly 65 person-trips expected during the critical weekday afternoon peak hour. Travel demand will be subsequently stratified by mode share and further reduced by the variation in travel routes within the broader study area. As such, the proposed development is expected to contribute minimal downstream impacts to intersections at the periphery of the context area, including Cedarview & Fallowfield.

Strandherd Drive from Fallowfield Road to Maravista Drive was also exempt from the study area, as this segment of road was reconstructed in 2015 following the City's Complete Streets design philosophy to accommodate multi-modal travel demands beyond the TMP's ultimate planning horizon of 2031. Consideration was given to the proposed development travel demands as part of the Highway 416 Lands CTS.

With respect to the exemptions discussed above, this TIA will focus on site-specific impacts, integration with its boundary streets, including a functional review of the site access geometry and intersection control, on-site drive aisle requirements to accommodate proposed design vehicles and a review of the site's parking and loading requirements.

A condensed study area is proposed for this TIA, which will consist of the following intersections:

- Fallowfield Road & O'Keefe Court/Cobble Hill Drive
- O'Keefe Court & Lusk Street
- Fallowfield Road & Forager Street

This study area is consistent with the TIA for the adjacent developments at both 125 Lusk Street and 135 Lusk Street, developments of similar size, land use type and overall traffic impacts on the adjacent road network.

An intersection-based Multi-Modal Level of Service (MMLOS) analysis is only required for signalized intersections. Based on analysis conducted for previous TIAs within the 4401 Fallowfield Road subdivision, it is expected that the Fallowfield & O'Keefe/Cobble Hill intersection will require traffic signals operationally under Future Background conditions and therefore intersection MMLOS will be limited to this intersection once signalization is required to achieve acceptable operating conditions. Segment-based MMLOS analysis will also be provided on Fallowfield Road between Forager Street and O'Keefe Court, as well as on the boundary streets, O'Keefe Court and Lusk Street.

3.5 Time Periods

Based on a preliminary review of trip generation rates associated with the proposed land uses, the peak weekly traffic generation is expected to occur on Saturdays. For the purposes of comparison, the weekday morning and afternoon peak periods represent 65% and 83% of this peak demand, respectively. It is important to note, however, that the Saturday peak likely does not coincide with the peak hour of adjacent street traffic. As such, consistent with other recently-conducted TIAs within the 4401 Fallowfield Road business park, the weekday morning and afternoon peak hours will constitute the critical analysis periods for this study.

3.6 Existing Lane Configurations and Traffic Volumes

3.6.1 Existing Lane Configurations

The existing lane configurations and traffic controls for the study area are shown in **Exhibit 4**.

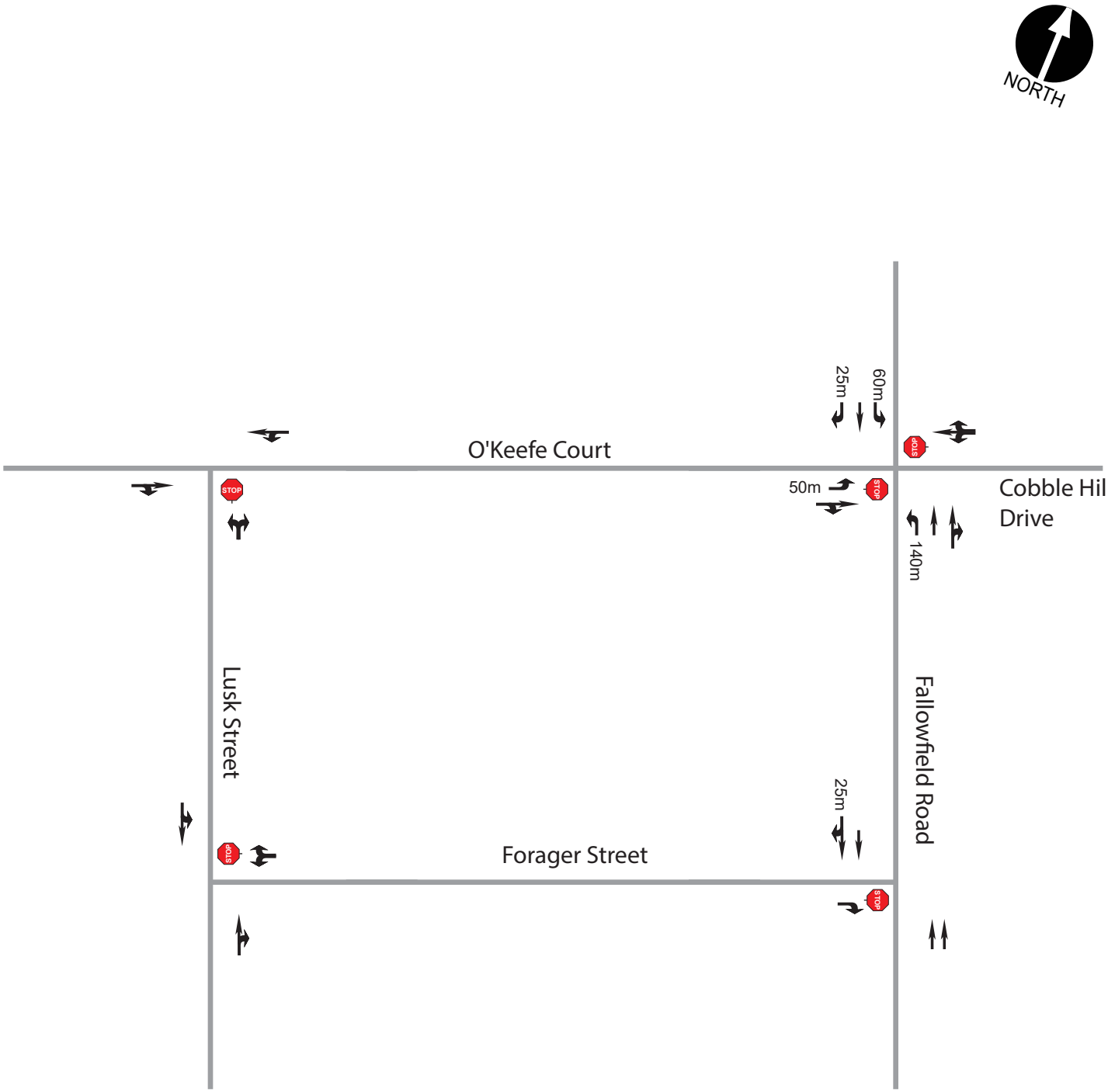
3.6.2 Existing Traffic Volumes

Weekday morning and afternoon peak hour turning movement counts were obtained from the City at the following intersection(s):

- Fallowfield Road and O'Keefe Court/Cobble Hill Drive (City of Ottawa – March 23, 2022)

Justification of background traffic volumes is discussed further in the Forecasting section of this report.

Weekday peak hour vehicular, pedestrian and cyclist traffic volumes representative of Existing (2022) conditions are shown in **Exhibit 5** below. Traffic count data is provided in **Appendix E**.



Legend

- STOP — Stop Sign
- Traffic Signal
- Lane Configurations
- xxxm — Storage Lengths

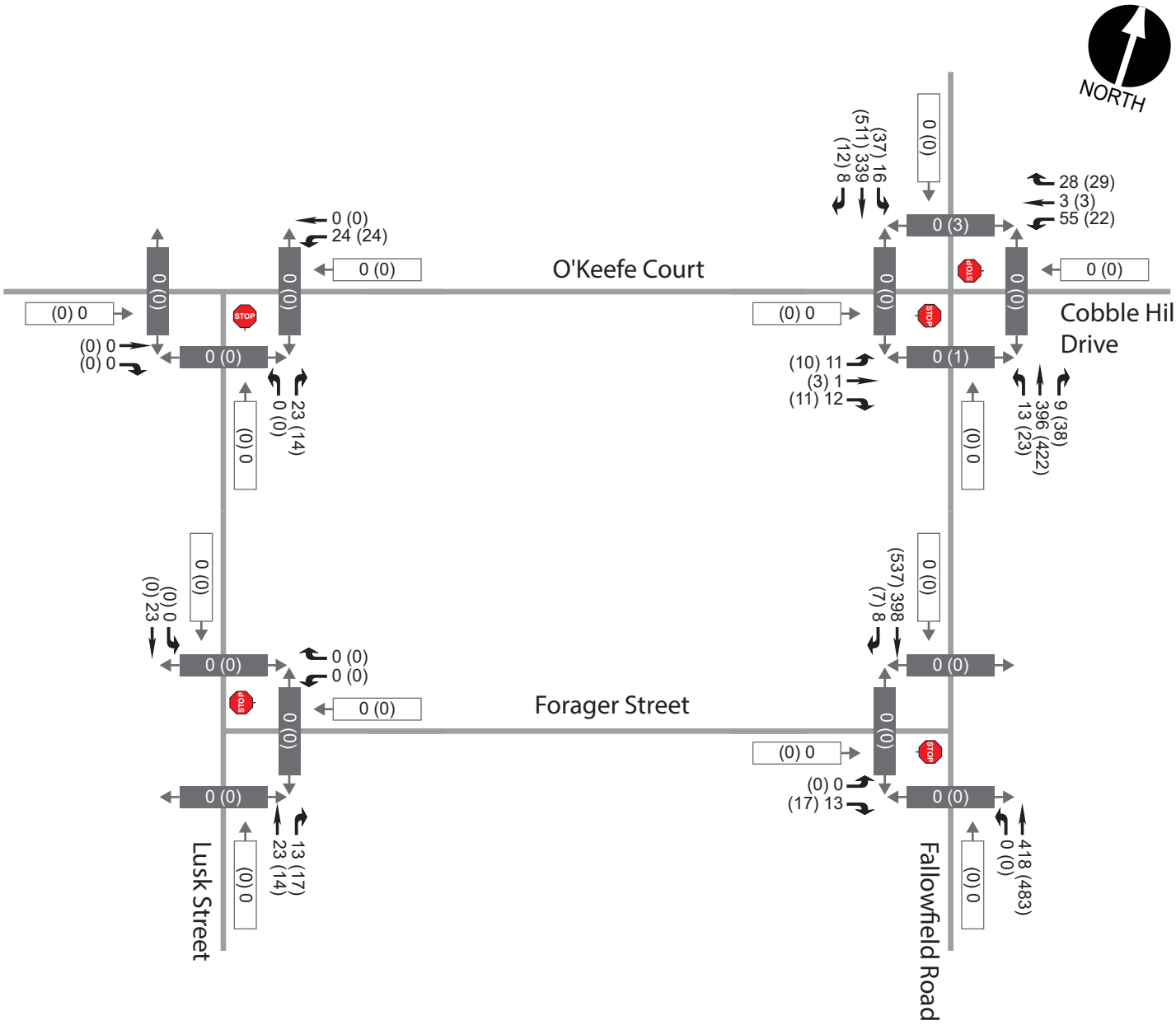
ARCADIS
IBI GROUP

140 Lusk Street
Transportation Impact Assessment

Exhibit 4:
Existing (2022)
Lane Configurations
& Intersection Controls

PROJECT No. 140895

SCALE: N.T.S.



Legend

STOP	Stop Sign
xxx (xxx)	Weekday AM (PM) Peak Hour Volume
xxx (xxx)	Pedestrian Volume
xxx (xxx)	Cyclist Volume
	Permitted Movements
xxx (xxx) xxx (xxx) xxx (xxx)	Vehicular Volume

ARCADIS
IBI GROUP

140 Lusk Street
Transportation Impact Assessment

Exhibit 5:
Existing (2022)
Traffic

PROJECT No. 140895

SCALE: N.T.S.

3.7 Study Horizon Year

It is expected that the proposed development will be constructed and fully occupied in a single phase in 2023. The horizon year for this study is therefore 2028.

3.8 Exemptions Review

The TIA Guidelines provide exemption considerations for elements of the Design Review and Network Impact components. **Table 4** summarizes the TIA modules that are not applicable to this study.

Table 4 - Exemptions Review

TIA MODULE	ELEMENT	EXEMPTION CONISDERATIONS	REQUIRED
DESIGN REVIEW COMPONENT			
4.1 Development Design	4.1.2 Circulation and Access	• Only required for site plans	✓
	4.1.3 New Street Networks	• Only required for plans of subdivision	✗
4.2 Parking	4.2.1 Parking Supply	• Only required for site plans	✓
	4.2.2 Spillover Parking	• Only required for site plans where parking supply is 15% below unconstrained demand	✗
NETWORK IMPACT COMPONENT			
4.5 Transportation Demand Management	All Elements	• Not required for site plans expected to have fewer than 60 employees and/or students on location at any given time	✗
4.6 Neighbourhood Traffic Management	4.6.1 Adjacent Neighbourhoods	• Only required when the development relies on local or collector streets for access and total volumes exceed ATM capacity thresholds	✓
4.8 Network Concept	n/a	• 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	✗

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.

4.1.1 Description of Capacity Issues

Table 5 below summarizes the existing traffic operational performance at the study area intersections based on Existing Traffic volumes. The intersection capacity analysis is based on locally-specific parameters as described in the TIA Guidelines. As prescribed in the TIA Guidelines, a peak hour factor (PHF) of 0.9 has been considered in the analysis of existing conditions. The Synchro output files have been provided in **Appendix F**.

Table 5 - Intersection Capacity Analysis: Existing Traffic

INTERSECTION	TRAFFIC CONTROL	AM PEAK HOUR		PM PEAK HOUR	
		OVERALL LOS (V/C OR DELAY)	CRITICAL MOVEMENTS (V/C OR DELAY)	OVERALL LOS (V/C OR DELAY)	CRITICAL MOVEMENTS (V/C OR DELAY)
Fallowfield Road & O'Keefe Court / Cobble Hill Drive	Unsignalized	C (21.9s)	WBL (21.9s)	D (26.6s)	WBL (26.6s)
Lusk Street & O'Keefe Court	Unsignalized	A (8.4s)	NBRL (8.4s)	A (8.4s)	NBRL (8.4s)
Fallowfield Road & Forager Street	Unsignalized	B (9.7s)	EBR (9.7s)	B (10.3s)	EBR (10.3s)

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

The recently-completed 135 Lusk Street TIA (IBI, 2021) identified potential capacity issues at the Fallowfield & O'Keefe Court/Cobble Hill intersection (i.e. LOS 'F') by 2023 under Background and Total traffic conditions with its two-way stop-controlled configuration. With traffic signals in place, the intersection capacity would be significantly improved to well within acceptable standards (i.e. LOS 'D' or better). If traffic signals are not implemented by the 2028 study horizon year, the results of the analysis indicate that long delays are expected at the Fallowfield & O'Keefe intersection with or without the inclusion of site-generated traffic.

4.1.2 Adjustment to Development Generated Demands

The proposed development is expected to contribute marginally to demand on the adjacent road network with up to 45 additional two-way vehicle-trips during the critical weekday afternoon peak hour and therefore is unlikely to exacerbate any potential traffic operational issues, particularly because the majority of site-generated traffic is expected to use non-critical movements and therefore will not contribute significantly to the overall intersection delay. The impacts on the Fallowfield & O'Keefe intersection will be lessened by the recently-completed Fallowfield & Forager intersection which provides a more direct connection to the arterial road network for right-turning traffic.

4.1.3 Adjustment to Background Network Demands

As prescribed in the TIA Guidelines, the effects of peak-hour spreading have been considered in in future analysis years of this study. It is anticipated that as traffic volumes continue to gradually increase, vehicular trips will have a natural tendency to be more evenly distributed across the peak hour (PHF = 1.0) and eventually increase demands in the shoulders of the peak as well. The impacts of peak hour spreading are accounted for in the Synchro modelling, completed as part of the Analysis component of this study.

4.2 Development Generated Traffic

4.2.1 Trip Generation Methodology

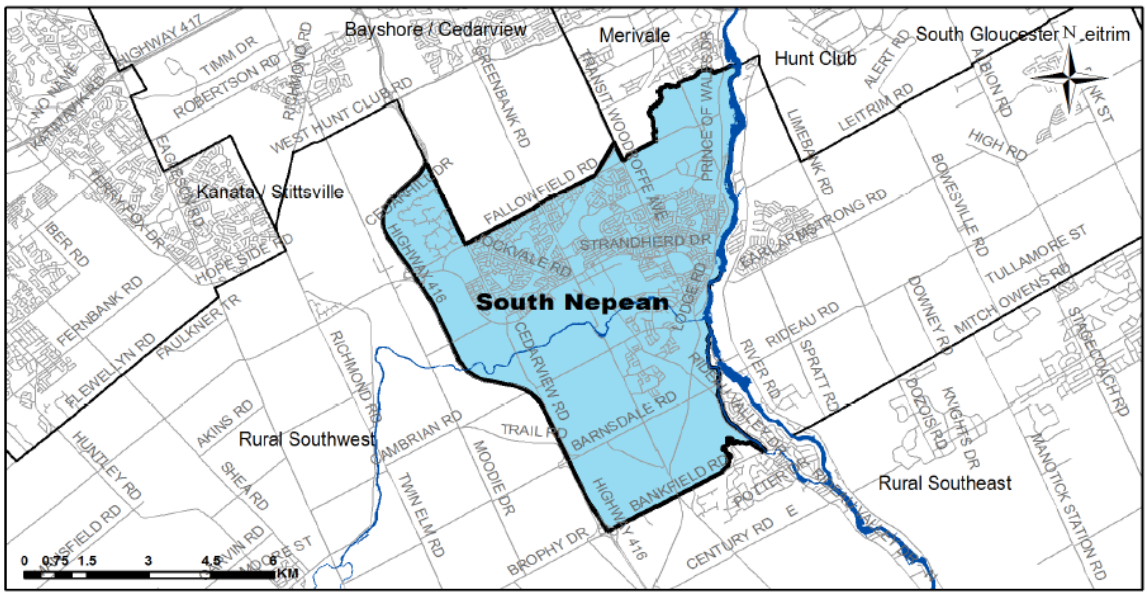
Peak hour site-generated traffic volumes were developed using the Institute of Transportation Engineers (ITE) Trip Generation Manual (11th Edition). The TIA Guidelines indicate that vehicle-trip generation rates from the ITE Trip Generation Manual should be converted to person-trips through the application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

Following the application of the vehicle-to-person-trip conversion factor, the person-trips were then subdivided based on representative mode share percentages applicable to the study area to determine the number of auto driver, auto passenger, transit, pedestrian, cycling and 'other' trip types.

Mode share targets were developed based on the local mode share distributions from the South Nepean Traffic Assessment Zone (TAZ) in the 2011 O-D Survey and adjusted to account for Condition 6b of the Conditions of Approval of the Draft Plan of Subdivision of 4401 Fallowfield Road. Condition 6b indicates that all TIAs prepared for Site Plan Applications within the 4401 Fallowfield Road subdivision must assume a maximum non-auto mode share (transit, walking, cycling and 'other') of 15%. Furthermore, Condition 6a indicates that the cumulative vehicle-trip generation of all sites within the 4401 Fallowfield Road subdivision shall not exceed 739 vehicles per hour during the weekday morning and afternoon peak periods.

The extents of the South Nepean TAZ are illustrated in **Figure 6** below.

Figure 6 – South Nepean TAZ



Source: 2011 O-D Survey

4.2.2 Trip Generation Results

4.2.2.1 Base 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 - Base Vehicular Trip Generation Results

LAND USE	SIZE	PERIOD	GENERATED TRIPS (VPH)		
			IN	OUT	TOTAL
310 – Hotel	88 rooms	AM	23	18	43
		PM	26	25	51

Notes: vph = vehicles per hour

4.2.2.2 Person Trip Generation

The TIA Guidelines indicate that a 1.28 vehicle-to-person-trip conversion rate should be utilized to convert the base 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

LAND USE	PERIOD	PERSON TRIPS (PPH)		
		IN	OUT	TOTAL
Hotel	AM	29	23	52
	PM	33	32	65

Notes: pph = persons per hour

4.2.2.3 Mode Share Proportions

The 2011 TRANS Origin-Destination (O-D) Survey provides approximations of the existing modal share within the South Nepean Traffic Assessment Zone (TAZ). Relevant extracts from the 2011 O-D Survey are provided in **Appendix G**.

Of the available data, a weighted average of the weekday AM ‘From’, AM ‘Within’, PM ‘To’ and PM ‘Within’ mode share distributions were determined to be the most appropriate to develop a baseline mode share for the proposed development. These distributions were selected to best represent the travel characteristics of hotel guests which typically arrive and check in during the afternoon and check out in the morning. The South Nepean TAZ also includes Barrhaven which provides a wide range of amenities and housing options for hotel prospective hotel employees. As such, the internal (i.e. ‘Within District’) mode share proportions were also considered in the development of the modal targets for the proposed development.

It is acknowledged, however, that the subject development is located on the periphery of an auto-oriented suburb and therefore, it was determined that the mode share targets specific to this development may deviate from the average mode share experienced in the South Nepean TAZ. The following adjustments were made to the mode share distributions to better represent the travel characteristics of the proposed development:

- ‘Cycling’ trips were reallocated to ‘Auto Driver’, as these active transportation trips are unlikely to coincide with the hotel’s peak hour trip generation; and
- The vast majority of ‘Other’ trips were assumed to occur by taxi/rideshare services and therefore in order to quantify their vehicular impacts, these trips were reallocated to ‘Auto Driver’.

Given the low probability of site-generated trips occurring by non-auto travel modes (transit, cycling, walking and other) within the horizon year of this study, the mode share targets of all non-auto travel modes were proportionally adjusted to yield a total non-auto mode share of 15% in accordance with the Conditions of Approval for 4401 Fallowfield Road. The difference in mode share was reallocated proportionally to the auto driver and auto passenger modes.

Table 8 below summarizes the 2011 O-D Survey mode shares, as well as the mode share targets.

Table 8 - 2011 O-D Survey Mode Shares and Proposed Mode Share Targets

TRAVEL MODE	2011 O-D SURVEY MODE SHARE				BLENDED MODE SHARE	BLENDED MODE SHARE[1]	MODE SHARE TARGETS
	AM From District	AM Within District	PM To District	PM Within District			
Auto Driver	60%	34%	62%	46%	52%	62%	69%
Auto Passenger	8%	19%	11%	21%	14%	14%	16%
Total Auto Mode Share	**68%**	**53%**	**73%**	**67%**	**66%**	**76%**	**85%**
Transit	27%	4%	24%	4%	16%	16%	10%
Cycling	0%	2%	0%	1%	1%	0%	0%
Walking	0%	17%	0%	20%	8%	8%	5%
Other	4%	24%	2%	9%	9%	0%	0%
Total Non-Auto Mode Share	**31%**	**47%**	**26%**	**34%**	**34%**	**24%**	**15%**

Notes:

[1] Adjustments to reallocate ‘Other’ mode share to ‘Auto Driver’

4.2.2.4 Trip Generation by Mode

The mode share targets summarized previously in **Table 8** were applied to the number of development-generated person-trips to establish the expected number of trips per travel mode, as shown in **Table 9** below.

Table 9 - Peak Hour Person Trips by Mode

MODE	AM			PM		
	IN	OUT	TOTAL	IN	OUT	TOTAL
Auto Driver	20	16	36	23	22	45
Auto Passenger	5	4	9	5	5	10
Transit	3	2	5	3	3	6
Cycling	0	0	0	0	0	0
Walking	1	1	2	2	2	4
Other	0	0	0	0	0	0
Total	**29**	**23**	**52**	**33**	**32**	**65**

4.2.2.5 Cumulative 4401 Fallowfield Road Trip Generation

Condition 6A of the Conditions of Approval of the Draft Plan of Subdivision of 4401 Fallowfield Road indicates that the total vehicle-trip generation of the subdivision shall not exceed 739 vehicle-trips per hour during the weekday morning and afternoon peak hours. **Table 10** below summarizes the total and cumulative number of vehicle-trips generated during the weekday morning and afternoon peak hours by all sub-developments within 4401 Fallowfield Road subdivision which have been approved or are currently undergoing a Site Plan Control application.

Table 10 - Cumulative 4401 Fallowfield Road Trip Generation

SUB-DEVELOPMENT	TOTAL AM (PM) VEHICLE TRIPS	CUMULATIVE AM (PM) VEHICLE TRIPS
100 Lusk Street	23 (22)	23 (22)
115 Lusk Street	13 (32)	36 (54)
125 Lusk Street	56 (64)	92 (118)
135 Lusk Street	42 (53)	134 (171)
140 Lusk Street	36 (45)	170 (216)
Total from Current Development Applications		**170 (216)**
Total Allowable Vehicle-Trip Generation		**739 (739)**
Percentage of Maximum Trips Permitted		**23% (29%)**

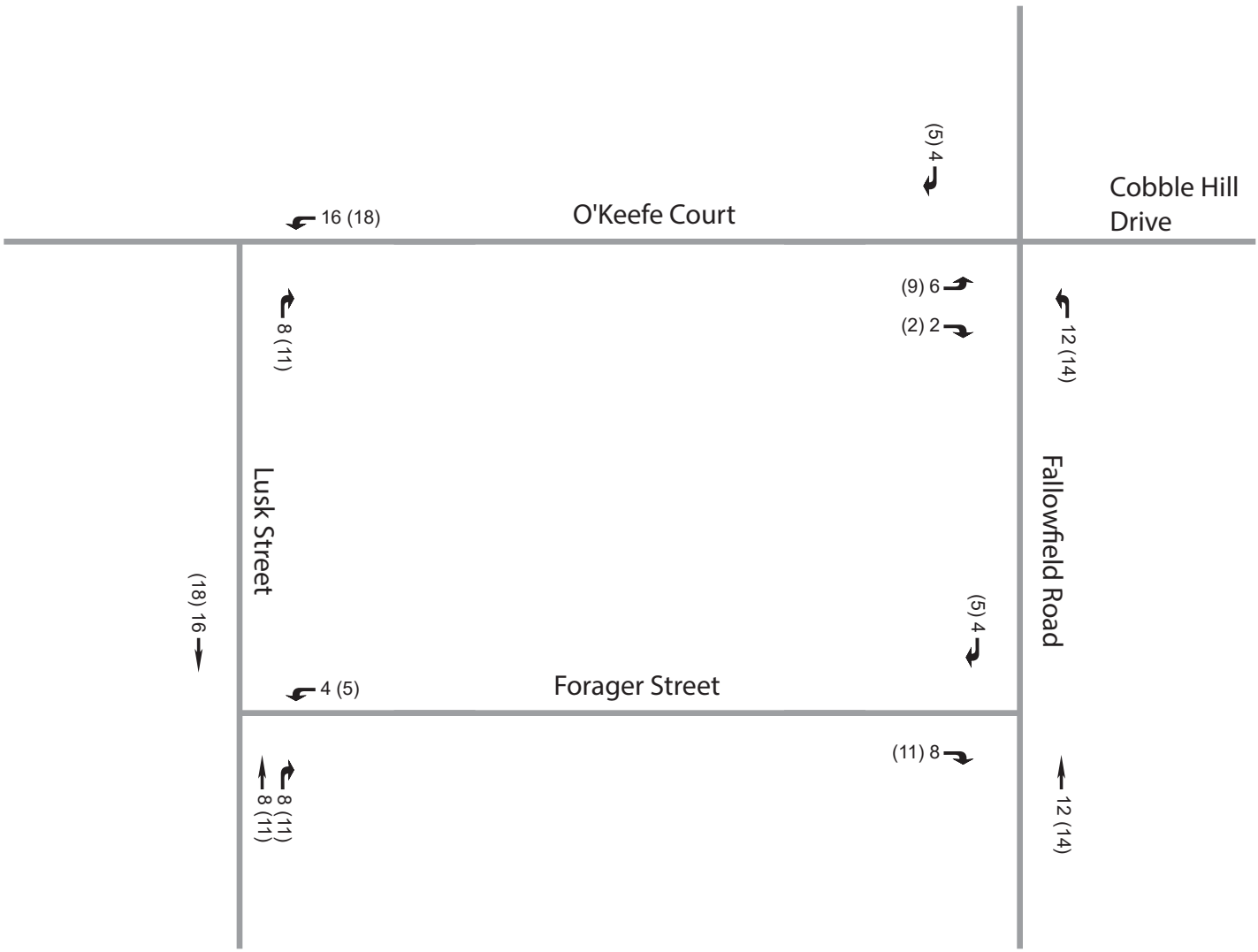
As indicated in **Table 10** above, the proposed development will not exceed the maximum permissible vehicular generation of the 4401 Fallowfield Road subdivision.

4.2.3 Trip Distribution and Assignment

As the proposed development is expected to primarily draw traffic from Highway 416, commercial areas of Barrhaven and the Ottawa International Airport, site-generated traffic has been distributed to the adjacent road network as follows:

- 40% to/from the north via Fallowfield Road
- 60% to/from the south via Fallowfield Road

Utilizing the estimated number of new auto trips and applying the above distribution, future site-generated traffic volumes are illustrated for each of the study area intersections in **Exhibit 6** below.



LEGEND

Permitted Movements

xxx (xxx) — Weekday AM (PM) Peak Hour Vehicular Volume

ARCADIS IBI GROUP

140 Lusk Street Transportation Impact Assessment

Exhibit 6: Site-Generated Traffic

PROJECT No. 140895

SCALE: N.T.S.

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 must be considered. The TIA Scoping reviewed the anticipated changes to the study area transportation network based on the Transportation Master Plan (TMP), the Ottawa Cycling Plan, the Ottawa Pedestrian Plan and the *2019 City-Wide Development Charges Background Study* and determined that there are no major road, pedestrian or cycling network modifications planned within the study area prior to the 2028 study horizon year.

It is worth noting that the intersection of Fallowfield & O'Keefe/Cobble Hill is being monitored by City staff for traffic signal warrants. Also, the intersection of Fallowfield & Forager was recently constructed which allows for an alternative means of accessing the arterial road network with right-in/right-out only movements permitted.

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. Consistent with the adjacent TIAs conducted for adjacent developments within the 4401 Fallowfield Road subdivision including 135 Lusk Street (IBI, 2021) and the 115 Lusk Street (IBI, 2021), a 2% rate of linear growth per annum is proposed within the study area for the calculation of future background traffic.

The background growth rate has only been applied to the through movements on Fallowfield Road as traffic generation relating to all known future adjacent developments has been explicitly accounted for in the analysis.

4.3.3 Other Area Development

All current adjacent development applications within the study area were previously identified in **Table 3** above. All of the developments identified have been accounted for in the future background volume projections. The developments represent specific areas of growth within the study area and are therefore considered in addition to the general background growth rate discussed previously. **Table 11** below summarizes the vehicle trip generation of all current adjacent background development applications.

Table 11 - Adjacent Development Vehicle Trip Generation

DEVELOPMENT	TIA	VEHICLE TRIP GENERATION			
		AM		PM	
		IN	OUT	IN	OUT
100 Lusk Street	Stantec (2020)	20	3	3	19
115 Lusk Street	IBI (2021)	8	5	17	15
135 Lusk Street	IBI (2021)	25	17	27	26
Gateway Industrial Centre (4497 O'Keefe Court)	Delcan (2008)	20	97	94	46
4190, 4200, 4210, 4236 Fallowfield Road and 2740 Cedarview Road	Novatech (2018)	108	33	131	76
CitiGate – 416 Employment Lands	Novatech (2012)	**Interim (2019)**			
		741	216	664	1,015
		Ultimate (2029)			
		3,494	635	1,128	3,316
CitiGate Hotel (4433 Strandherd Drive)	Novatech (2019)	29	20	27	26

It should be noted that some of the developments shown in **Table 11** above are not expected to be fully built out by the 2028 horizon year of the study or are sub-developments within a larger development. Background development traffic volumes have been adjusted appropriately to account for this.

The CitiGate – 416 Employment Lands is a large multi-phase development which is currently under construction and is expected to be fully built out by 2029. The projected traffic volumes generated by this development at the 2023 and 2028 analysis years were linearly interpolated and considered the development status at the time of the recorded traffic counts utilized in this study.

It was assumed that the Gateway Industrial Centre (4497 O'Keefe Court) development would be fully built out by the 2023 analysis year.

4.4 Traffic Volume Summary

4.4.1 Future Background Traffic Volumes

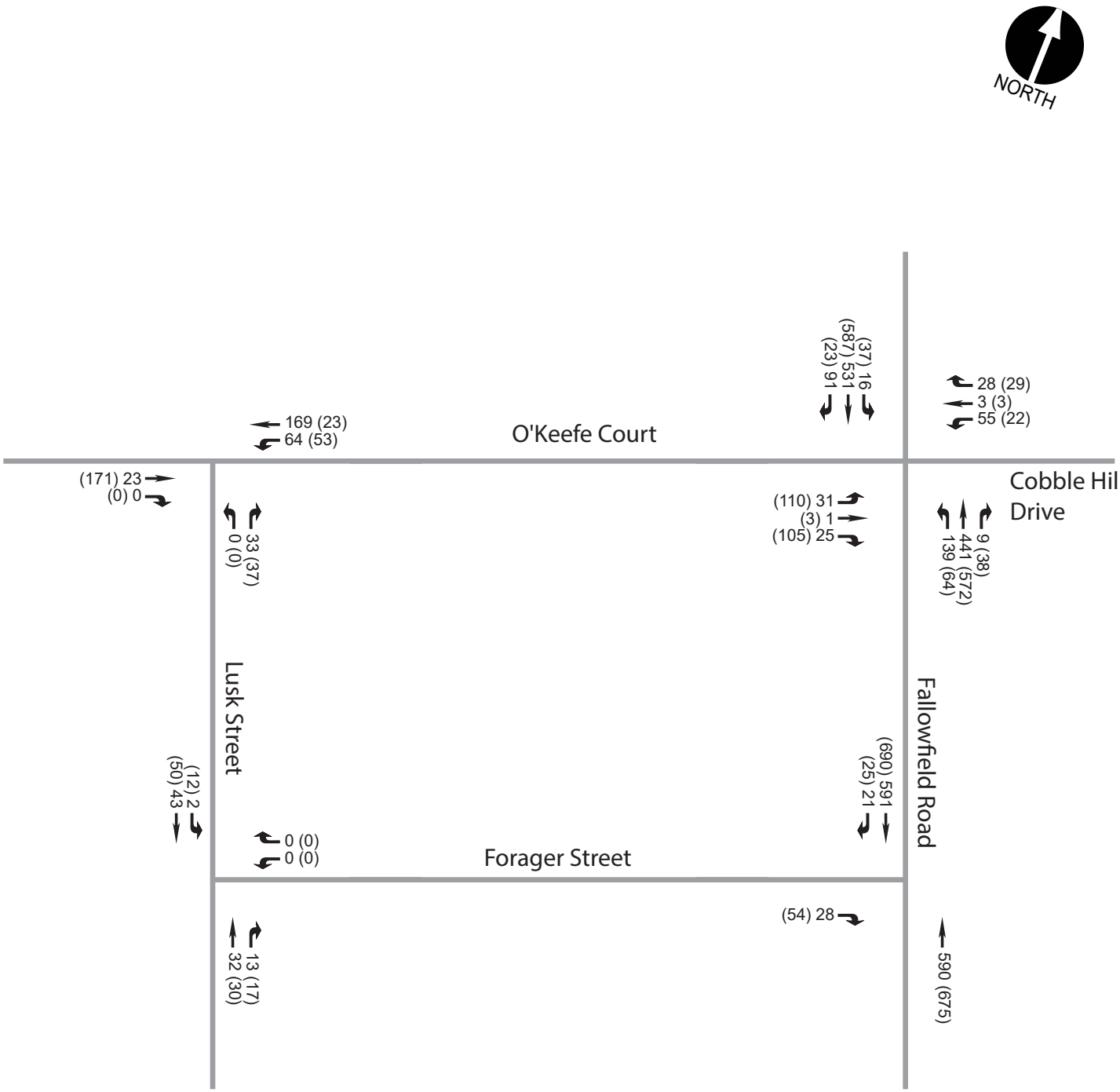
Future background traffic volumes projections have been established by combining the adjacent development traffic and background traffic derived through the application of a growth rate, as discussed previously.

Exhibit 7 and **Exhibit 8** present the future background traffic volumes anticipated for the 2023 build-out year, as well as the 2028 study horizon, respectively.

4.4.2 Future Total Traffic Volumes

Future total volumes have been derived by combining the site-generated traffic from **Exhibit 6** with the future background volumes from **Exhibit 7** and **Exhibit 8**.

Exhibit 9 and **Exhibit 10** present the future total traffic volumes anticipated for 2023 and 2028 analysis years, respectively.



LEGEND

Permitted Movements

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

Weekday AM (PM) Peak Hour Vehicular Volume

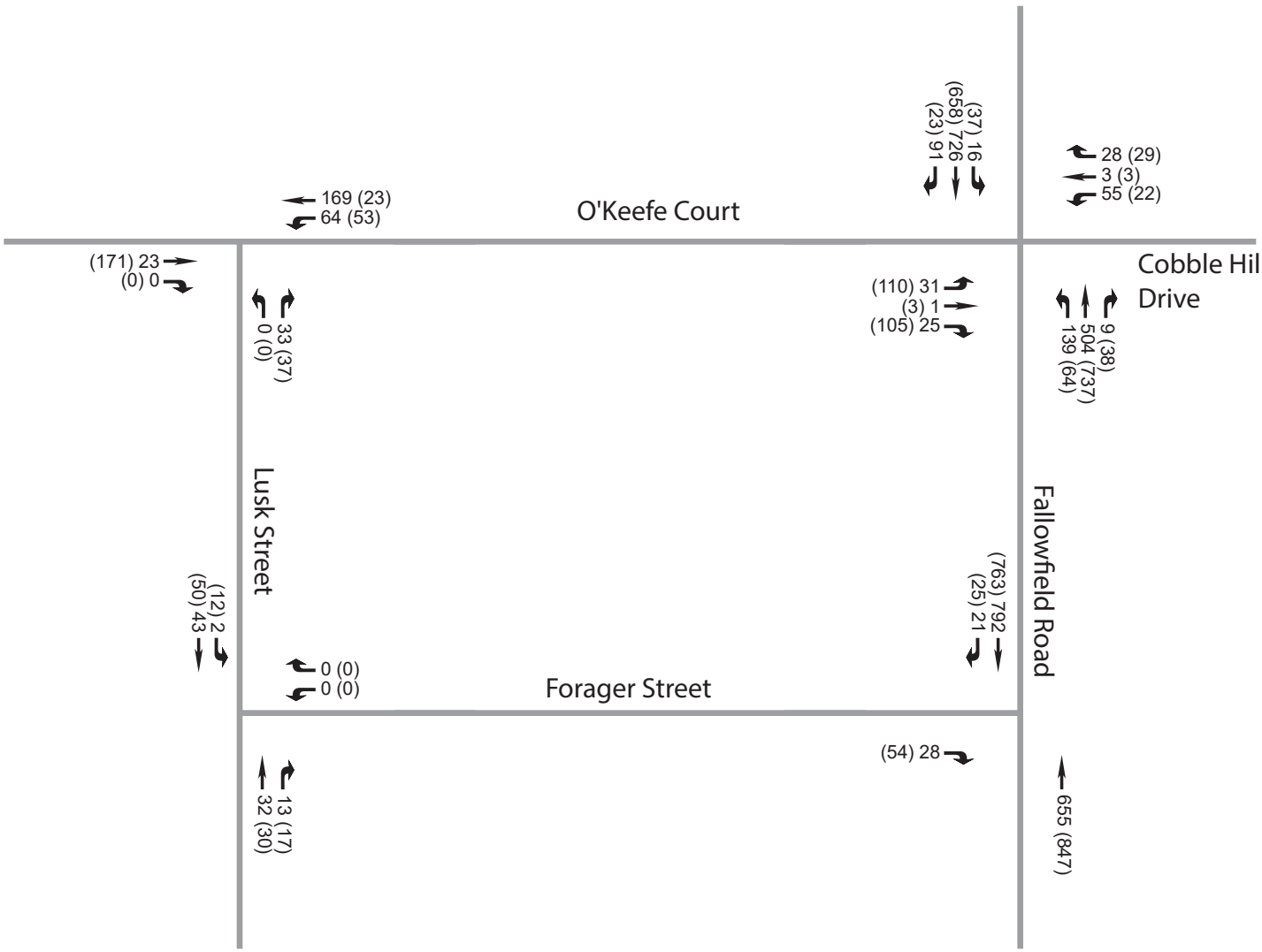
ARCADIS
IBI GROUP

140 Lusk Street
Transportation Impact Assessment

Exhibit 7:
Future (2023)
Background Traffic

PROJECT No. 140895

SCALE: N.T.S.



LEGEND

Permitted Movements

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

Weekday AM (PM) Peak Hour Vehicular Volume

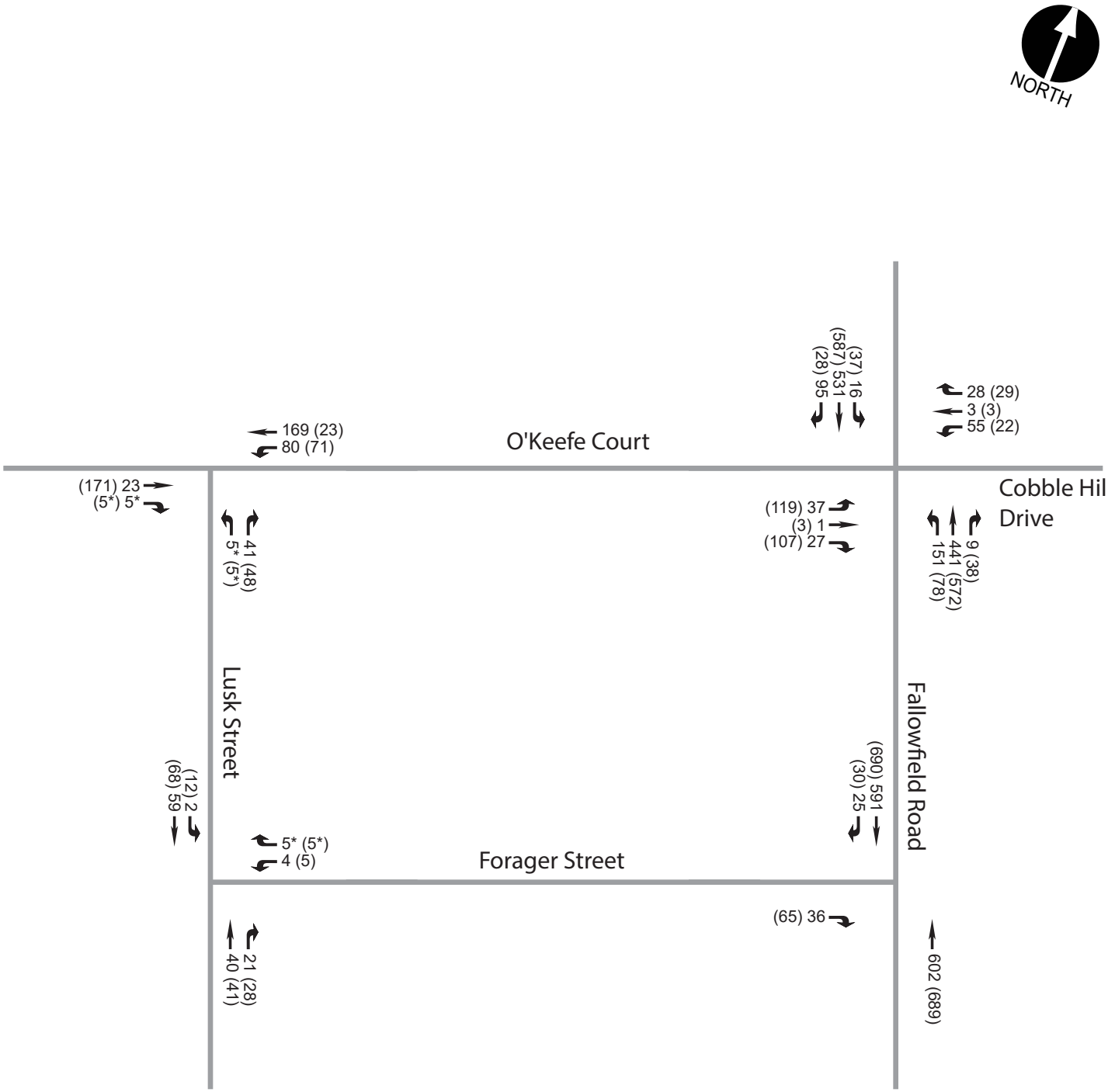
ARCADIS
IBI GROUP

140 Lusk Street
Transportation Impact Assessment

Exhibit 8:
Future (2028)
Background Traffic

PROJECT No. 140895

SCALE: N.T.S.



LEGEND

Permitted Movements

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

Weekday AM (PM) Peak Hour Vehicular Volume

*Nominal Volumes

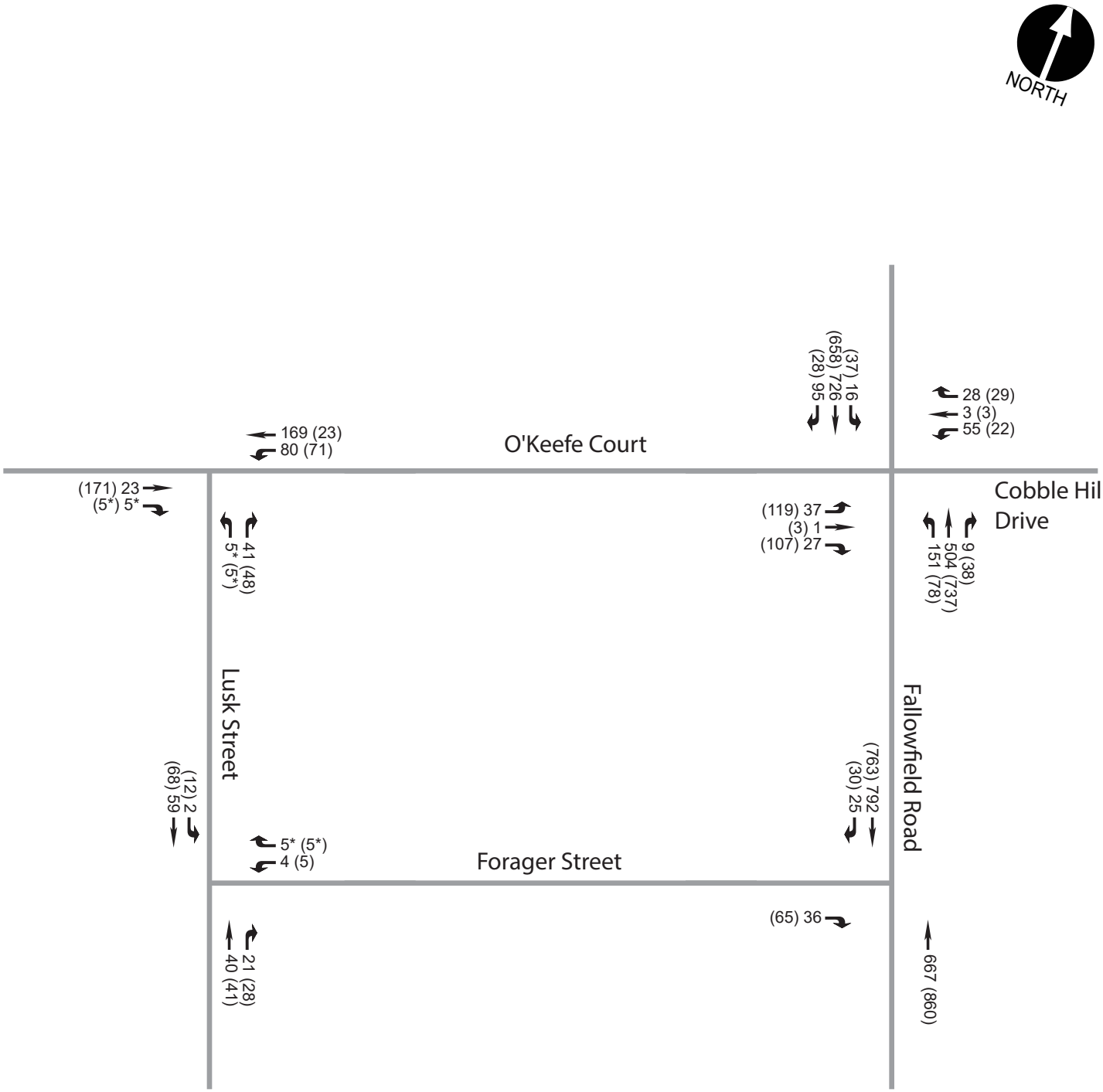
ARCADIS
IBI GROUP

140 Lusk Street
Transportation Impact Assessment

Exhibit 9:
Future (2023)
Total Traffic

PROJECT No. 140895

SCALE: N.T.S.



LEGEND

Permitted Movements

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

Weekday AM (PM) Peak Hour Vehicular Volume

*Nominal Volumes

ARCADIS
IBI GROUP

140 Lusk Street
Transportation Impact Assessment

Exhibit 10:
Future (2028)
Total Traffic

PROJECT No. 140895

SCALE: N.T.S.

5 Analysis

5.1 Development Design

5.1.1 Design for Sustainable Modes

The proposed development is located an approximate 830-metre walking distance from existing bus stops on the east side of Fallowfield & O'Keefe Court/Cobble Hill, assuming that transit users cross Fallowfield Road at Strandherd Drive. The RMA for the Fallowfield Road & Forager Street intersection originally included a new southbound bus stop on Fallowfield Road south of O'Keefe Court, which would ultimately reduce the walking distance to transit to approximately 390m, however a bus stop at this location has now been deferred until after the signalization of this intersection.

The TDM-Supportive Development Design and Infrastructure Checklist was completed and is provided in **Appendix H**. This checklist includes the following measures which are being considered in association with the proposed development to offset the vehicular impact on the adjacent road network:

- Providing a designated area for carpool drivers (plus taxi and ride-hailing services) to drop off or pick up passengers at the main entrance without using fire lanes or other no-stopping zones; and
- Secured and anchored bicycle parking spaces provided in a highly visible and lighted area with curb depressions to facilitate access to the internal drive aisle.

These measures are similar to those provided by adjacent developments.

5.1.2 Circulation and Access

The internal drive aisle generally provides at least 6.7 metres of clear width throughout the site, as indicated on the site plan presented in **Exhibit 2** and is therefore in compliance with the Zoning By-law. Drive aisle widths adjacent to compact vehicle parking spaces are proposed at 6.0-metres, which is expected to sufficiently accommodate maneuverability associated with small passenger vehicles. In accordance with the by-law, the proportion of compact parking stall will not exceed 50% of the total on-site supply and will be clearly signed for 'small cars only'.

Vehicle turning templates for a firetruck and waste collection design vehicles, which are expected to be the largest vehicles requiring access to the site, are presented in **Appendix I**.

5.1.3 New Street Networks

Not Applicable: The New Street Networks element is exempt from this TIA, as defined in the study scope. This element is not required for Site Plan Control applications.

5.2 Parking

5.2.1 Parking Supply

Based on the size of the proposed hotel, a minimum of 108 vehicle parking spaces are required to meet the Zoning Bylaw requirements. The site plan indicates that 108 vehicle parking spaces will be provided, therefore the proposed parking supply is within the permissible range.

The Zoning By-law also requires a minimum number of bicycle parking spaces to support the proposed development. A total of six bicycle parking spaces will be provided, meeting the number of spaces required. As indicated on the site plan presented in **Exhibit 2**, these bike parking stalls

will be provided in the west corner of the parking lot with sidewalks leading to the hotel's primary entrance and therefore will provide easy access for hotel patrons or staff.

5.2.2 Spillover Parking

The minimum parking supply requirement specified in the Zoning Bylaw has been met, therefore, no further review of parking is necessary for the purposes of this study.

5.3 Boundary Streets

5.3.1 Mobility

There are three existing boundary streets adjacent to or within close proximity to the proposed development: O'Keefe Court, Lusk Street and Fallowfield Road. As discussed in Section 3.4, Segment-based Multi-Modal Level of Service (MMLOS) results for each of these road segments are provided in **Table 12** below.

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

Table 12 – Segment-based MMLOS Results

LOCATION	LEVEL OF SERVICE BY MODE			
	PEDESTRIAN (PLOS)	BICYCLE (BLOS)	TRANSIT (TLOS)	TRUCK (TkLOS)
EXISTING & FUTURE CONDITIONS				
O'Keefe – Fallowfield to terminus	F (Target: D)	D (Target: D)	D (Target: N/A[1])	B (Target: N/A[2])
Lusk – O'Keefe to terminus	A (Target: D)	D (Target: D)	D (Target: N/A[1])	B (Target: N/A[2])
Fallowfield – Forager to O'Keefe	C (Target: D)	A (Target: D)	D (Target: N/A[1])	B (Target: N/A[2])

Notes:

[1] Not identified as a rapid transit or transit priority corridor in the TMP.

[2] Not identified as a truck route.

All modes presented in **Table 12** meet their respective targets excluding the PLOS along O'Keefe Court. Operating speed would have to be reduced to 50km/h or less and a 1.5m concrete sidewalk would be required with at least a 0.5m boulevard width to meet the PLOS target. At this time, there is no indication that O'Keefe Court will be urbanized and therefore this deficiency cannot be addressed. A multi-use pathway located along the north side of the roadway, however, provides a safe off-road link to the broader pedestrian and cycling network.

5.3.2 Road Safety

A summary of all reported collisions within the study area over the past 5 years was presented in the Scoping section of this TIA. The City requires a safety review if at least six collisions for any one movement or of a discernible pattern, over a five-year period have occurred. Based on the review of re-occurring events identified in the Scoping section of this report, none of the study area roadway segments or intersections require further analysis.

5.4 Access Intersections

5.4.1 Location and Design of Access

The proposed development will provide a new full-movement access on Lusk Street within the existing cul-de-sac. The new vehicular connection is in conformance with the City of Ottawa Private Approach By-law 2003-447, with particular confirmation of the following items:

- Width: A private approach should have a minimum width of 2.4m and a maximum width of 9.0m.
    - The proposed site access driveway will be 6.7m wide. ✓
- Quantity and Spacing of Private Approaches: For sites with frontages between 20 and 34 metres, one (1) two-way private approach or two (2) one-way private approaches are permitted. Any two private approaches must be separated by at least 9.0m and can be reduced to 2.0m in the case of two one-way driveways. On lots that abut more than one roadway, these provisions apply to each frontage separately.
    - The frontage on Lusk Street is approximately 30m and therefore the single proposed two-way private approach is compliant with the by-law. ✓
- Distance from Property Line: Private approaches must be at least 3.0m from the abutting property line, however this requirement can be reduced to 0.3m provided that the access is a safe distance from the access serving the adjacent property, sight lines are adequate and that it does not create a traffic hazard.
    - The proposed site access driveway is located approximately 6.7m and 23m from the eastern and southern property boundaries, respectively. Given that the site access driveway is located within a cul-de-sac which promotes reduced operating speeds and that there are no existing vehicular access driveways immediately to the north, the position of both site access driveways is deemed to be acceptable. ✓

The Transportation Association of Canada's (TAC) Geometric Design Guide for Canadian Roads (June 2017) does not suggest a minimum clear throat length for a site access driveway proposed on a local road. The clear throat length is provided to ensure that any queues that form due to on-site circulation blockages do not spillback onto collector or higher-order roads. Given the low traffic volumes typically expected on local roads including Lusk Street, occasional queue spillback is not likely to result in traffic operational issues.

5.4.2 Access Intersection Control

The proposed site access driveway on Lusk Street will be stop-controlled, which is expected to be sufficient, given the low site-generated traffic volumes presented in the Forecasting section of this report.

5.4.3 Intersection Design (MMLOS)

Not Applicable – The proposed site access driveway will be unsignalized, therefore Multi-Modal Level of Service (MMLOS) analysis is not required.

The proposed access driveway will be designed as per City Standard Drawing SC7.1 (March 2021) to provide continuous sidewalks across the vehicular connection and prioritize pedestrians.

5.5 Transportation Demand Management (TDM) Program

Not Applicable – The provision for Transportation Demand Management (TDM) post-occupancy programming measures is exempt from this TIA, as defined in the study scope. This element is not required for non-residential site plans that are projected to have fewer than 60 employees and/or students on location at any given time.

5.6 Neighbourhood Traffic Management

5.6.1 Adjacent Neighbourhoods

The proposed development relies on the following local roads for access to the arterial road network: O'Keefe Court, Lusk Street and Forager Street. With the development of the 4401 Fallowfield Road Subdivision lands, O'Keefe Court is expected to function as a collector road, while Lusk Street and Forager Street will operate as local roads. To determine if neighbourhood traffic management measures are required, traffic volumes projected for the study horizon year are compared against the appropriate liveability thresholds, as prescribed in the TIA Guidelines.

The livability threshold for a local road is 120 vehicles per hour in the peak direction. Based on Future (2028) Total Traffic volumes, Lusk Street and Forager Street will be required to accommodate up to 80 and 65 weekday peak hour volumes, respectively. As such, both local roads are expected to operate well within this threshold during the timeframe of this study.

Total traffic volume projections along O'Keefe Court indicate that this road will operate within its threshold of 300 vehicles per hour during the weekday peak hours, with up to 250 vehicles approaching Fallowfield Road. As such, a neighbourhood traffic management plan will not be required for this TIA.

5.7 Transit

5.7.1 Route Capacity

The estimated future site-generated transit passenger demand was provided in the Forecasting component of this study. The results have been summarized in **Table 13** below.

Table 13 - Development Generated Transit Demand

PERIOD	PEAK PERIOD DEMAND		
	IN	OUT	TOTAL
AM	3	2	5
PM	3	3	6

As indicated in **Table 13** above, the subject development is expected to contribute a negligible increase in transit ridership to the existing transit network, therefore no additional transit capacity will be required to accommodate the proposed development.

5.7.1 Transit Priority Measures

Transit priority measures are not required to support the projected site-generated transit demands which are expected to be nominal.

5.8 Review of Network Concept

Not Applicable – The Network Concept element is exempt from this TIA, as defined in the study scope. This element is not required for proposed developments expected to generate less than 200 person-trips during the weekday morning and afternoon peak hours.

5.9 Intersection Design

The following sections summarize the methodology and results of the multi-modal intersection capacity analysis conducted within the study area.

5.9.1 Intersection Control

5.9.1.1 Traffic Signal Warrants

Traffic signal warrants were completed for the Fallowfield & O'Keefe/Cobble Hill intersection. Based on the results of the analysis, traffic signals are not warranted at this intersection under Future (2028) Total Traffic conditions.

The results of the traffic signal warrant analysis are provided in **Appendix K**.

5.9.1.2 Roundabout Analysis

The feasibility of implementing a roundabout was evaluated at the intersection of Fallowfield & O'Keefe/ Cobble Hill. It was determined that this form of traffic control would not be feasible, given that only one of the suitability factors had been met. Further, the implementation of a roundabout is not consistent with the City's long-term plans for this location which is planned to be upgraded to a signalized intersection once the appropriate warrants are met.

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

5.9.2 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.

5.9.2.1 Signalized Intersections

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 and the overall delay of an unsignalized intersection to a LOS designation. These criteria are as follows:

Table 14 - LOS Criteria for Signalized and Unsignalized Intersections

LOS	SIGNALIZED INTERSECTIONS	UNSIGNALIZED INTERSECTIONS
	VOLUME TO CAPACITY RATIO (v/c)	DELAY (seconds)
A	0 to 0.60	<10
B	0.61 to 0.70	>10 and <15
C	0.71 to 0.80	>15 and <25
D	0.81 to 0.90	>25 and <35
E	0.91 to 1.00	>35 and <50
F	> 1.00	>50

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 existing conditions analysis utilized a Peak Hour Factor (PHF) of 0.90, while future conditions consider 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.

5.9.3 Intersection Capacity Analysis

Following the established intersection capacity analysis criteria described above, the future conditions were analysed during the weekday peak hour traffic volumes derived in this study.

The following section presents the results of the intersection capacity analysis. All tables summarize study area intersection LOS results during the weekday morning and afternoon peak hour periods.

The Synchro output files have been provided in **Appendix F**.

5.9.3.1 Future (2023) Background Traffic

An intersection capacity analysis has been undertaken using the Future (2023) Background Traffic volumes presented in **Exhibit 7**, yielding the following results:

Table 15 - Intersection Capacity Analysis: 2023 Background Traffic

INTERSECTION	TRAFFIC CONTROL	AM PEAK HOUR		PM PEAK HOUR	
		OVERALL LOS (V/C OR DELAY)	CRITICAL MOVEMENTS (V/C OR DELAY)	OVERALL LOS (V/C OR DELAY)	CRITICAL MOVEMENTS (V/C OR DELAY)
Fallowfield Road & O'Keefe Court / Cobble Hill Drive	Unsignalized	**F (66.7s)**	**WBTRL (66.7s)**	**F (75.2s)**	**EBL (75.2s)**
	Signalized	A (0.40)	SBT (0.40)	A (0.55)	SBT (0.55)
Lusk Street & O'Keefe Court	Unsignalized	A (8.5s)	NBRL (8.5s)	A (9.3s)	NBRL (9.3s)
Fallowfield Road & Forager Street	Unsignalized	B (10.4s)	EBR (10.4s)	B (11.1s)	EBR (11.1s)

5.9.3.2 Future (2028) Background Traffic

An intersection capacity analysis has been undertaken using the Future (2028) Background Traffic volumes presented in **Exhibit 8**, yielding the following results:

Table 16 - Intersection Capacity Analysis: 2028 Background Traffic

INTERSECTION	TRAFFIC CONTROL	AM PEAK HOUR		PM PEAK HOUR	
		OVERALL LOS (V/C OR DELAY)	CRITICAL MOVEMENTS (V/C OR DELAY)	OVERALL LOS (V/C OR DELAY)	CRITICAL MOVEMENTS (V/C OR DELAY)
Fallowfield Road & O'Keefe Court / Cobble Hill Drive	Unsignalized	**F (175.0s)**	**WBTRL (175.0s)**	**F (146.0s)**	**EBL (146.0s)**
	Signalized	A (0.52)	SBT (0.52)	B (0.63)	NBT (0.63)
Lusk Street & O'Keefe Court	Unsignalized	A (8.5s)	NBRL (8.5s)	A (9.3s)	NBRL (9.3s)
Fallowfield Road & Forager Street	Unsignalized	B (11.3s)	EBR (11.3s)	B (11.5s)	EBR (11.5s)

Without signalization, traffic operations are expected to deteriorate at the Fallowfield & O'Keefe/Cobble Hill intersection under Future (2028) Background Traffic conditions, with average delays on some movements of approximately 3 minutes per vehicle. With traffic signals in place, the intersection is expected to operate at an acceptable Level of Service (LOS 'D' or better).

All other study area intersections are shown to operate acceptably (LOS 'D' or better) under Future (2028) Background Traffic conditions.

5.9.3.3 Future (2023) Total Traffic

An intersection capacity analysis has been undertaken using the Future (2023) Total Traffic volumes presented in **Exhibit 9**, yielding the following results:

Table 17 - Intersection Capacity Analysis: 2023 Total Traffic

INTERSECTION	TRAFFIC CONTROL	AM PEAK HOUR		PM PEAK HOUR	
		OVERALL LOS (V/C OR DELAY)	CRITICAL MOVEMENTS (V/C OR DELAY)	OVERALL LOS (V/C OR DELAY)	CRITICAL MOVEMENTS (V/C OR DELAY)
Fallowfield Road & O'Keefe Court / Cobble Hill Drive	Unsignalized	**F (75.0s)**	**WBTRL (75.0s)**	**F (98.3s)**	**EBL (98.3s)**
	Signalized	A (0.40)	SBT (0.40)	A (0.55)	SBT (0.55)
Lusk Street & O'Keefe Court	Unsignalized	A (8.5s)	NBRL (8.5s)	A (9.3s)	NBRL (9.3s)
Fallowfield Road & Forager Street	Unsignalized	B (10.5s)	EBR (10.5s)	B (11.2s)	EBR (11.2s)

5.9.3.4 Future (2028) Total Traffic

An intersection capacity analysis has been undertaken using the Future (2028) Total Traffic volumes presented in **Exhibit 10**, yielding the following results:

Table 18 - Intersection Capacity Analysis: 2028 Total Traffic

INTERSECTION	TRAFFIC CONTROL	AM PEAK HOUR		PM PEAK HOUR	
		OVERALL LOS (V/C OR DELAY)	CRITICAL MOVEMENTS (V/C OR DELAY)	OVERALL LOS (V/C OR DELAY)	CRITICAL MOVEMENTS (V/C OR DELAY)
Fallowfield Road & O'Keefe Court / Cobble Hill Drive	Unsignalized	**F (198.9s)**	**WBTRL (198.9s)**	**F (196.1s)**	**EBL (196.1s)**
	Signalized	A (0.51)	SBT (0.51)	B (0.65)	NBT (0.65)
Lusk Street & O'Keefe Court	Unsignalized	A (8.5s)	NBRL (8.5s)	A (9.3s)	NBRL (9.3s)
Fallowfield Road & Forager Street	Unsignalized	B (11.4s)	EBR (11.4s)	B (11.6s)	EBR (11.6s)

Similar to Future (2028) Background Traffic conditions, some movements at the Fallowfield & O'Keefe/Cobble Hill intersection are expected to continue experiencing long delays, if the intersection remains unsignalized. With traffic signals in place, the overall Level of Service would be expected to improve significantly to LOS 'A' and LOS 'B' and operate well within acceptable standards during the weekday morning and afternoon peak hours, respectively.

All other study area intersections are expected to continue operating at an acceptable Level of Service (LOS 'D' or better) under Future (2028) Total Traffic conditions.

5.9.4 Intersection Design (MMLOS)

An analysis of conditions for each mode has been conducted based on the methodology prescribed in the 2017 Multi-Modal Level of Service Guidelines. The Level of Service for each mode has been calculated for each intersection where signals exist or are anticipated.

The Future (2028) Total Traffic intersection MMLOS results have been summarized in **Table 19** below. Detailed analysis results are provided in **Appendix J**.

Table 19 - Intersection MMLOS - Future Conditions

LOCATION	LEVEL OF SERVICE BY MODE			
	PEDESTRIAN (PLOS)	BICYCLE (BLOS)	TRANSIT (TLOS)	TRUCK (TkLOS)
INTERSECTION				
Fallowfield & O'Keefe/ Cobble Hill	**F** (Target: C)	**F** (Target: C)	C (Target: N/A[1])	**F** (Target: D)

Notes: [1] Not identified as a rapid transit or transit priority corridor in the TMP.

5.9.4.1 Summary of Potential Improvements

Based on the MMLOS results outlined in **Table 19** 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 number of traffic lanes that pedestrians must cross, 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 the General Urban Area is 'C'.

The results of the analysis indicate that the intersection of Fallowfield & O'Keefe/Cobble Hill is expected to operate at PLOS 'F', primarily as a result of the effective number of lanes required to cross (crossing distance/3.5m) in combination with expected pedestrian delays. Providing enhanced pedestrian features such as a median, pedestrian leading interval, zebra stripe high-visibility crosswalk markings on the north and south approaches would reduce the level of pedestrian exposure on those crossings. The above features in combination with a reduced pedestrian crossing width of no more than 14 metres would achieve a PLOS of 'C'. It should be noted, however, that a reduction in the cycle length may result in negative impacts to the vehicle level of service. Alternatively, a 'protected intersection' design would help achieve the PLOS target.

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 is 'C'.

The results of the analysis indicate that cycling facilities at the Fallowfield & O'Keefe/Cobble Hill intersection are not sufficient to achieve the BLOS target. Given the high operating speeds at this location, only the provision of physically separated cycling facilities with two-stage, left-turn bike boxes on all approaches will be sufficient to achieve the BLOS target. Alternatively, a 'protected intersection' design would help achieve attain the BLOS target.

Transit

Intersection TLOS is based on the average signal delay experienced by transit vehicles on each approach. According to the MMLOS Guidelines, there is no target for TLOS on roads that are not designated as either a rapid transit or transit priority corridors in the TMP.

The results of the analysis indicate that the eastbound and westbound approaches are expected to experience average delays between 10 and 20 seconds during the weekday peak hours,

however as there are no frequent transit routes that utilize either side street approach, neither is factored into the TLOS calculation. Both the northbound and southbound approaches do currently serve as transit routes and are expected to experience relatively minor delays of 10s or less upon signalization of the Fallowfield & O'Keefe/Cobble Hill intersection which results in an overall intersection TLOS of 'C'.

Trucks

The Truck LOS (TkLOS) is based on the right-turn radii, as well as the number of receiving lanes for vehicles making a right-turn from the traffic lane being analyzed. The TkLOS target for Truck Routes on arterial or collector roads in the General Urban Area is 'D'.

Overall, the intersection TkLOS target is not attainable as it would require an increased right-turn radius to 10-15m and/or an increase to more than two receiving lanes on departure from intersection. However, turning movement count data indicates that trucks infrequently utilize Cobble Hill Drive, which is consistent with its classification as a local road and non-truck route. Given that its primary function is to provide access to adjacent residential subdivisions with infrequent transit movements, the existing right-turn radii is considered acceptable in this context. It should be noted that the right-turn radii to/from O'Keefe Court meets the TkLOS target, which is appropriate given that the Highway 416 Lands development is expected to generate regular truck traffic.

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 cyclists but are not required to accommodate the proposed development.

5.10 Geometric Review

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

Sight Distance and Corner Clearances

The site access driveway is being proposed on a cul-de-sac which would experience reduced operating speeds in comparison with the remainder of the Lusk Street corridor due to its circular configuration which forces vehicles to slow down upon entry. There are no signalized or stop-controlled intersections within close proximity to the proposed site access driveway. As such, sightline visibility and corner clearance are not a concern with respect to the proposed access location.

5.10.2 Auxiliary Lane Analyses

Auxiliary turning lane requirements for all study area intersections are described as follows:

5.10.2.1 Auxiliary Left-Turn Lane Requirements (Unsignalized)

The intersection of O'Keefe Court & Lusk Street does not warrant a left-turn lane based on the advancing and opposing volumes projected at this intersection under Future (2028) Total Traffic conditions.

The Fallowfield & Forager intersection is restricted to right-in/right-out movements, therefore it was not necessary to assess left-turn lane requirements at this intersection.

The results of the left-turn lane warrant analysis are provided in **Appendix L**.

5.10.2.2 Auxiliary Left-Turn Lane Requirements (Signalized)

As the intersection of Fallowfield/O'Keefe has been shown to require signalization, a review of auxiliary left-turn lane storage requirements was completed under Future (2028) 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:

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

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 20** below.

Table 20 - Auxiliary Left-Turn Storage Analysis at Signalized Intersections

INTERSECTION	APPROACH	95TH %ILE QUEUE LENGTH AM/PM (M)	CALCULATED QUEUE LENGTH AM/PM (M)	EXISTING PARALLEL LENGTH (M)	STORAGE DEFICIENCY (M)
Fallowfield Road & O'Keefe Court / Cobble Hill Drive	NB	20/10	30/15	140	Existing Storage Adequate
	SB	5/5	5/10	60	Existing Storage Adequate
	EB	10/25	10/25	50	Existing Storage Adequate
	WB	15/10[1]	10/5	-	Existing Storage Adequate[2]

Notes: [1] Synchro queues were determined based on existing shared lane configuration
[2] Through volumes are nominal during weekday peak hours (i.e. less than 10 veh/h)

As per the results of the queue length analyses presented **Table 20** above, the existing parallel lanes have sufficient storage to accommodate the projected Future (2028) Total Traffic demand. As such, no modifications to the existing auxiliary lanes are required for signalization of this intersection within the timeframe of this study.

5.10.2.3 Auxiliary Right-Turn Lane Requirements (Unsignalized)

The Transportation Association of Canada (TAC) suggests that auxiliary right-turn lanes be considered "when the volume of decelerating or accelerating vehicles compared with through vehicles causes undue hazard." Consideration for auxiliary right-turn lanes is typically given when the right-turning traffic exceeds 10% of the through volume and is at least 60 vehicles per hour.

The Fallowfield & Forager intersection was recently constructed with a southbound parallel lane that includes sufficient deceleration length, therefore no additional storage is required on this lane.

5.10.2.4 Auxiliary Right-Turn Lane Requirements (Signalized)

Similarly for 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 such as Fallowfield Road, and may not be applicable in all circumstances. The highest of the weekday morning and afternoon peak hour volumes under Future (2028) Total Traffic conditions were considered in this evaluation.

The results of the auxiliary right-turn lane analysis are summarized in **Table 21** below.

Table 21 – Auxiliary Right-Turn Lane Storage Analysis at Signalized Intersections

INTERSECTION	APPROACH	RIGHT TURN VOLUME	APPROACH VEHICLES TURNING RIGHT (%)	95TH %ILE QUEUE LENGTH (M)	EXISTING PARALLEL LENGTH (M)	STORAGE DEFICIENCY (M)
Fallowfield & O'Keefe/Cobble Hill	NB	38	4%	<10	115	Existing Storage Adequate
	SB	95	11%	<10	25	Existing Storage Adequate
	EB	107	47%	10[1]	-	Existing Storage Adequate[2]
	WB	29	54%	10[1]	-	Existing Storage Adequate[2]

Notes: [1] Synchro queues were determined based on existing shared lane configuration
[2] Through volumes are nominal during weekday peak hours (i.e. less than 10 veh/h)

Based on the traffic volumes projections developed for this TIA an a review of the 95th percentile queue lengths on each approach, no additional right-turn facilities are expected to be required as a result of projected background or site-generated volumes at the Fallowfield & O'Keefe/Cobble Hill intersection with traffic signals within the timeframe of this study.

5.11 Summary of Improvements Indicated and Modification Options

As per the intersection capacity, Multi-Modal Level of Service and auxiliary lane analyses results presented above, off-site improvements to the adjacent road network have been recommended in order to accommodate the transportation demands of both background and site-generated traffic. The MMLOS results indicate existing deficiencies with respect user comfort and safety that could be considered for implementation by the City but are not required to safely accommodate the proposed development.

5.11.1 Fallowfield Road & O'Keefe Court/Cobble Hill Drive

The intersection of Fallowfield & O'Keefe/Cobble Hill is presently operating as a two-way stop-controlled intersection. The results of the analysis indicate that, by 2023, traffic signals will be operationally required under background traffic conditions, however traffic signals are not warranted within the timeframe of this study. As indicated in **Exhibit 6**, the proposed development is only expected to contribute nominal volumes at this intersection. With traffic signals in place, the intersection would be expected to operate at an acceptable level of service (i.e. LOS 'B') under Future (2028) Total Traffic conditions. If traffic signals are not implemented by the 2028 study horizon year, the results of the analysis indicate that delays of at least 3 minutes are expected at the Fallowfield & O'Keefe intersection with or without the inclusion of site-generated traffic. It is recommended that the City monitor this intersection on an annual basis to determine the appropriate timing for its signalization.

An analysis of auxiliary lane requirements found available storage at this intersection is sufficient and can accommodate future travel demands within the context of this study.

As identified through intersection-based MMLOS analysis conducted for Fallowfield & O'Keefe, various measures would need to be implemented in order to achieve the PLOS an BLOS targets. To attain the PLOS target, zebra stripe high-visibility crosswalk markings, a pedestrian leading interval and a median on the northbound/southbound approaches are required in conjunction with a reduced pedestrian crossing width to no more than four effective lane widths. The implementation of bike lanes or higher-order cycling facilities on all approaches, along with two-stage, left-turn bike boxes are required to meet the BLOS targets. Alternatively, a 'protected intersection' design with fully-integrated pedestrian and cycling facilities will help attain the PLOS and BLOS targets. These features should be considered by the City upon signalization of this intersection but are not required to accommodate the proposed development.

5.11.2 O'Keefe Court & Lusk Street

The O'Keefe & Lusk intersection is expected to operate at a high level of service (i.e. LOS 'A') beyond the 2028 horizon year of this study with stop control on Lusk Street and free-flow on O'Keefe Court.

The auxiliary lane analyses conducted as part of this study indicates that left- or right-turn auxiliary lanes are not required on any of the intersection approaches within the timeframe of this study.

5.11.3 Fallowfield Road & Forager Street

The Fallowfield & Forager intersection was recently constructed with a diverter island to restrict turning movements to right-in/right-out. With these restrictions in place, the intersection is expected to operate at LOS 'B' or better within the timeframe of this study.

6 Conclusion

The proposed hotel at 140 Lusk Street is expected to generate up to 36 and 45 two-way vehicular trips during the weekday morning and afternoon peak hours, respectively, and represent a marginal increase in volumes on the adjacent road network. The mode share targets were developed based on the South Nepean Traffic Assessment Zone (TAZ) and proportionally adjusted, in accordance with the Conditions of Approval for 4401 Fallowfield Road, to yield an 85% auto/15% non-auto mode share split.

Fallowfield & O'Keefe/Cobble Hill is presently operating as a two-way stop-controlled intersection. The results of the analysis indicate that, by 2023, traffic signals will be operationally required under background traffic conditions, however this form of traffic control is not warranted within the timeframe of this study. With traffic signals in place, the intersection would be expected to operate at LOS 'B' under the critical weekday afternoon peak hour beyond the study horizon year. If traffic signals are not implemented by the 2028 study horizon year, delays of at least 3 minutes are expected at the Fallowfield & O'Keefe intersection with or without the inclusion of site-generated traffic. As site-generated traffic will not contribute significantly to any potential traffic operational issues at this intersection, it is recommended that the City continue monitoring this location on an annual basis to determine the appropriate timing for the introduction of traffic signals.

The results of the analysis indicate that the intersections of O'Keefe Court & Lusk Street and Fallowfield Road & Forager Street are expected to operate within acceptable standards (LOS 'D' or better) during the weekday morning and afternoon peak hours. Both are T-intersections that are configured with stop control on the minor road and are not expected to require additional auxiliary lanes or future modifications within the timeframe of this study.

A multi-modal analysis identifies deficiencies in the existing road network and potential remediation measures have been suggested which the City could consider to meet these prescribed targets. It should be noted that, although these measures would improve for a range of transportation modes, they are not required to safely accommodate the transportation demands of the proposed development.

Roadway modifications (RMA-2019-TPD-041B) were recently implemented to satisfy a conditional requirement for the Subdivision and are now complete. This RMA included a right-in/right-out intersection at Fallowfield & Forager and a multi-use path along the west side of Fallowfield Road between O'Keefe Court to just south of Forager Street. It is understood that the southbound bus stop originally proposed as part of this RMA has been deferred until traffic signals are implemented at the Fallowfield & O'Keefe/Cobble Hill intersection.

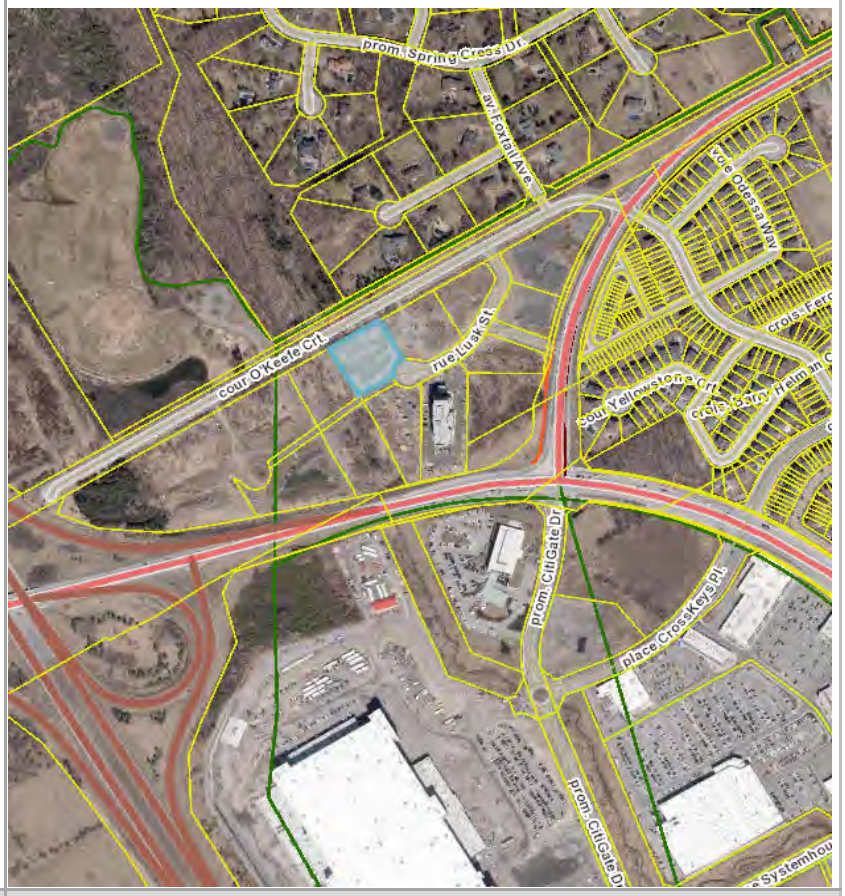
All study area intersections were shown to operate well within the capacity constraints of the adjacent transportation network, with the appropriate modifications in place (i.e. signalization of Fallowfield & O'Keefe/Cobble Hill by 2023). Further, the proposed development will contribute a nominal increase in traffic on the adjacent road network. A post-development Monitoring Plan is, therefore, not a requirement of this study.

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

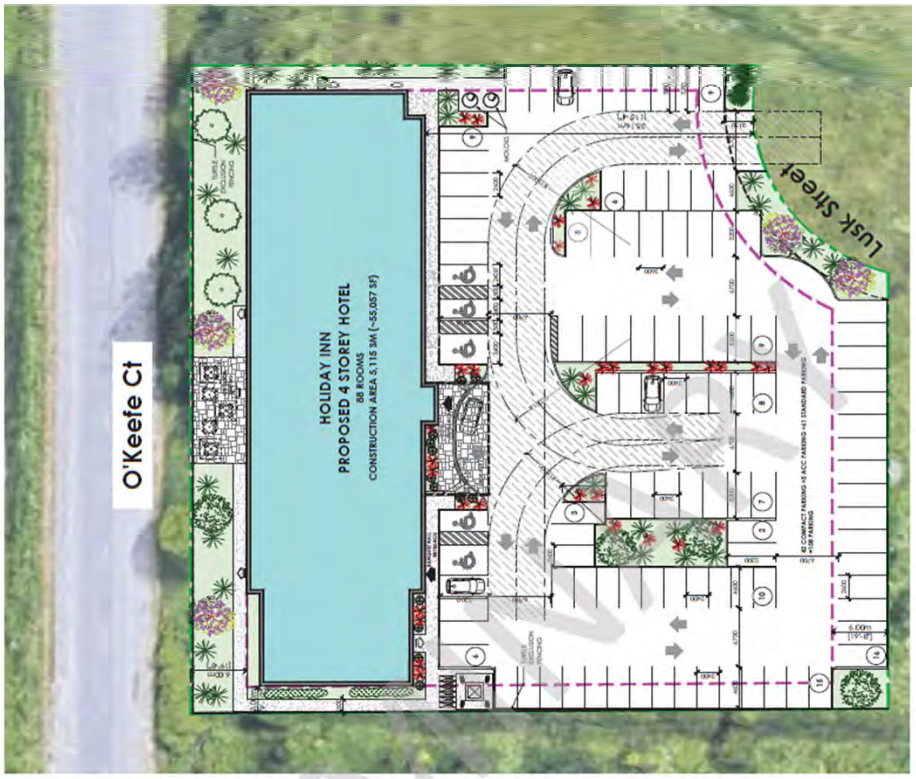
Appendix A – Screening Form

City of Ottawa 2017 TIA Guidelines Screening Form

1. Description of Proposed Development

Municipal Address	140 Lusk Street, Ottawa, Ontario.
Description of Location	The proposed development is located on the north side of the cul-de-sac at the end of Lusk Street. It is bordered by O'Keefe Court to the north and undeveloped lands to the east and west. 
Land Use Classification	Hotel
Development Size (units)	88 Rooms
Development Size (m^2)	N/A
Number of Accesses and Locations	One (1) proposed full-movement site access driveway on Lusk Street
Phase of Development	Single Phase
Buildout Year	2023

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



SITE STATISTICS		
ZONING	IP - BUSINESS PARK INDUSTRIAL	
	IP [224,0] [H(12)]	
SETBACKS	**MIN REQ'D (m)**	**PROVIDED (m)**
FRONT YARD	6.0	35.16
REAR YARD	6.0	6.00
INTERIOR SIDE	3.0	3.00
INTERIOR SIDE	3.0	3.00
WIDTH OF LANDSCAPE STRIP		
ABUTTING A STREET	3.0	3.0
HEIGHT OF BUILDING	**MAX**	**PROVIDED**
BUILDING HEIGHT (MEASURED FROM GRADE TO T/O ROOF DECK)	12m	13.72m
CONSTRUCTION AREA	**SM**	**SF**
GROUND FLOOR-BANQUET HALL (140 PERSON)	172	1,851
GROUND FLOOR-PRE FUNCTION	42	452
GROUND FLOOR-HOTEL	1,049	11,291
2ND FLOOR	1,264	13,821
3RD FLOOR	1,264	13,821
4TH FLOOR	1,264	13,821
TOTAL CONSTRUCTION AREA	5,115	55,057
PARKING REQUIREMENTS (BASED ON TABLE 101: AREA "C" ON SCHEDULE 1A) - SPACES @ 2.6W x 5.2L - 50% of stalls are compact stalls (size of 2.4W x 4.6L per zoning standards)	**REQ'D**	**PROVIDED**
HOTEL = 1 SPACE PER GUEST UNIT (88 ROOMS)	88	88
PLACE OF ASSEMBLY (10 PER 100sm OF GFA OF ASSEMBLY AREA)	20	20
BANQUET HALL + PRE FUNCTION AREA (200 SQ M)		
TOTAL NO. OF SPACES	108	108
ACCESSIBLE PARKING (CITY OF OTTAWA ACCESSIBILITY DESIGN STANDARDS)	**REQ'D**	**PROVIDED**
101-133 PARKING SPACES, THEN 5 ACCESSIBLE SPACES REQ'D	5	5
TYPE A: 3.4M WIDTH=340	3	2
TYPE B: 2.4M WIDTH=240	2	3
	5	5
BICYCLE PARKING (BASED ON TABLE 111A (2)(A)(II))	**REQ'D**	**PROVIDED**
HOTEL = 1 PER 1000m OF GFA	5	5
ALL OTHER (ie. PLACE OF ASSEMBLY) = 1 PER 1500m OF GFA	1	1
DRIVEWAYS AND AISLE REQUIREMENTS (SECTION 107)	**REQ'D (MIN)**	**PROVIDED**
TWO-WAY DRIVEWAY	6.7	6.7
TWO-WAY PARKING AISLE	6.7	6.7
LOADING REQUIREMENTS (SECTION 113) (SIZE: 3.5W X 9L PARALLEL: 3.5W X 7.0 OTHER: 4.2M VERT CLR)	**REQ'D**	**PROVIDED**
LOADING SPACE	2	0

SITE PLAN LEGEND
PROPERTY LINE
BUILDING SETBACK LINE
LANDSCAPE BUFFER

PATH: S:\1_PROJECTS\2022\1_Project\23-022Z_JH-140 Lusk St\Ottawa\5-Design\1-Site Design\
PROJECT No.: 23-022Z
ISSUED FOR: ISSUED FOR CLIENT & BRANDSREVIEW
ISSUE DATE: SEP 08, 2022
02 REVISION

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^2	
Industrial	5,000 m^2	
Fast-food restaurant or coffee shop	100 m^2	
Destination Retail	1,000 m^2	
Gas Station or convenience market	75 m^2	

**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.*

Preliminary trip generation estimates were calculated based on average trip generation characteristics derived for the Hotel land use (310), as indicated in the Institute of Transportation Engineers (ITE) Trip Generation (11th Edition). The 1.28 person-trip conversion factor recommended in the TIA Guidelines was aaplied to the base trip generation results to obtain the equivalent person-trip generation. As indicated below, trip generation is expected to exceed the 60-person trip threshold during the weekday afternoon peak hour, therefore the trip generation trigger is satisfied.

Baseline Vehicle Trips (ITE)

					AM				PM		
Land Use	Land Use Type	Ind. Var.	Size		In	Out	Total		In	Out	Total
310 Hotel	Other	rooms	88	Equation:		T=0.46*X				T=0.59*X	
				% Distribution:	56%	44%	100%		51%	49%	100%
				Person Trips:	23	18	40		26	25	52

Conversion Factors

		AM				PM		
Land Use		In	Out	Total		In	Out	Total
310 Hotel	Conversion Factor:		1.28				1.28	
	Person Trips:	29	23	52		33	32	65

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 not 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 not satisfied.

5. Summary

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

Based on the results of the TIA Screening Form, the Trip Generation Trigger is satisfied. As such, a TIA is required for the proposed development.

Appendix B – Proposed Development Site Plan

SITE STATISTICS		
ZONING	IP - BUSINESS PARK INDUSTRIAL	
	IP [2265]H(12)	
SETBACKS	MIN REQ'D (m)	PROVIDED (m)
FRONT YARD	6.0	35.16
REAR YARD	6.0	6.00
INTERIOR SIDE	3.0	3.00
INTERIOR SIDE	3.0	3.00
WIDTH OF LANDSCAPE STRIP		
ABUTTING A STREET	3.0	3.0
MAXIMUM FLOOR SPACE INDEX	2	1
HEIGHT OF BUILDING	MAX	PROVIDED
BUILDING HEIGHT (MEASURED FROM GRADE TO T/O ROOF DECK)	12m	14.17m
CONSTRUCTION AREAGROSS FLOOR AREA (GFA)	SM	SF
GROUND FLOOR-BANQUET HALL (140 PERSON)	172	1,851
GROUND FLOOR-PRE FUNCTION	42	452
GROUND FLOOR-HOTEL	1,049	11,291
2ND FLOOR	1,284	13,821
3RD FLOOR	1,284	13,821
4TH FLOOR	1,284	13,821
TOTAL CONSTRUCTION AREA	5,115	55,057
PARKING REQUIREMENTS (BASED ON TABLE 101; AREA "C" ON SCHEDULE 1A) - SPACES @ 2.6W x 5.2L - 50% of stalls are compact stalls (size at 2.4W x 4.6L per zoning standards)	REQ'D	PROVIDED
HOTEL: 1 SPACE PER GUEST UNIT (88 ROOMS)	**88**	**88**
PLACE OF ASSEMBLY (10 PER 100sm OF GFA OF ASSEMBLY AREA)	**20**	**20**
BANQUET HALL + PRE FUNCTION AREA (200 SQ M)		
REDUCED PARKING SPACES (COMPACT CARS) UP TO 50% OF THE PARKING SPACES		51
TYPICAL PARCKING STALLS PROVIDED		52
ACC TYPICAL PARCKING STALLS PROVIDED		5
TOTAL NO. OF SPACES	**108**	**108**
ACCESSIBLE PARKING (CITY OF OTTAWA ACCESSIBILITY DESIGN STANDARDS)	**REQ'D**	**PROVIDED**
101-133 PARKING SPACES, THEN 5 ACCESSIBLE SPACES REQ'D	5	5
TYPE A (VAN), MIN WIDTH=3400	2	2
TYPE B, MIN WIDTH=2400	3	3
BICYCLE PARKING (BASED ON TABLE 111A (g)&(i))	**REQ'D**	**PROVIDED**
HOTEL = 1 PER 1000sm OF GFA	5	5
ALL OTHER (ie. PLACE OF ASSEMBLY) = 1 PER 1500sm OF GFA	1	1
TOTAL NO. OF SPACES	6	6
DRIVEWAYS AND AISLE REQUIREMENTS (SECTION 107)	**REQ'D (MIN)**	**PROVIDED**
TWO-WAY DRIVEWAY	6.7	6.7
TWO-WAY PARKING AISLE	6.7	6.7
LOADING REQUIREMENTS (SECTION 113) (SIZE: 3.5W x9.0L PARALLEL; 3.5W x7.0 OTHER; 4.2M VERT CLR)	**REQ'D**	**PROVIDED**
LOADING SPACE	2	0

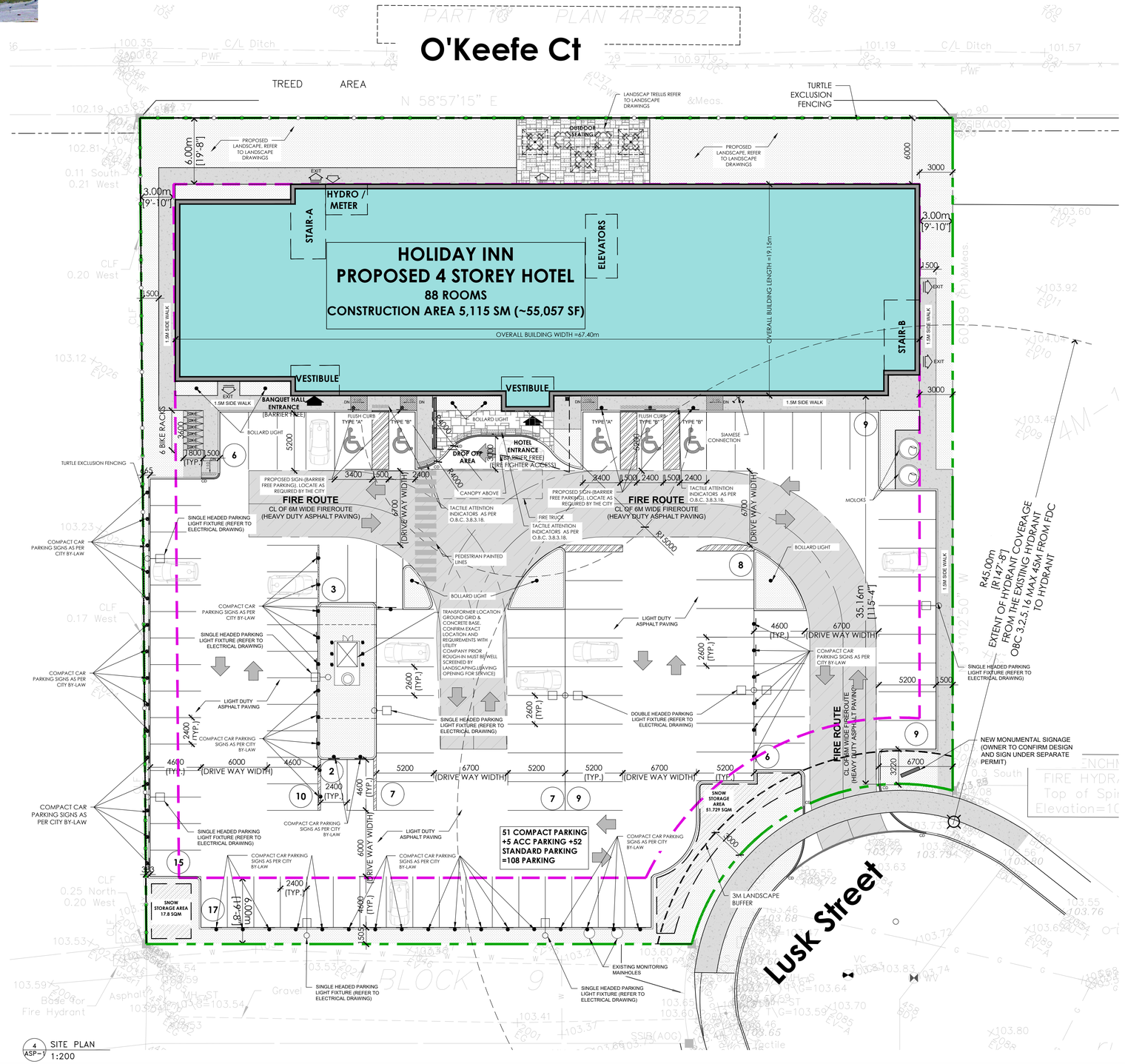
1 ASP-1 SITE STATS
N.T.S

HOLIDAY INN OTTAWA- ROOM MIX

	1st FLOOR	2nd FLOOR	3rd FLOOR	4th FLOOR	TOTAL	PERCENTAGE	MIX
KING	3	6	6	6	21	24%	32%
ACC KING	1	2	2	2	7	8%	
QQ	0	15	15	15	45	51%	53%
ACC QQ	0	1	1	0	2	2%	
JUNIOR SUITE	0	4	4	5	13	15%	15%
TOTAL	4	28	28	28	**88**	100%	100%
TOTAL ACC. ROOMS	1	3	3	2	**9**	10%	100%

2 ASP-1 ROOM MIX
N.T.S

3 ASP-1 SITE LOCATION
N.T.S



4 ASP-1 SITE PLAN
1:200

SITE PLAN LEGEND			
	PROPERTY LINE	●	RECESSED EXTERIOR LIGHT FIXTURE @ SOFFIT & PROTE COCHERE /REFER TO ELECTRICAL DWGS.
	BUILDING SETBACK LINE		NEW HEAVY DUTY ASPHALT PAVING (REMAINDER OF THE SITE TO RECEIVE LIGHT DUTY ASPHALT PAVING)
	LANDSCAPE BUFFER		DECORATIVE NON-SLIP SURFACE PAVING UNDER PORTE COCHERE (REFER TO LANDSCAPE DWGS)
CD	CURB DEPRESSION		LANDSCAPED AREA
	ENTRY/ EXIT ACCESS POINTS		POURED CONCRETE PAD AT LOADING AREA & WASTE COLLECTION
	EXISTING TOWN HYDRANT	●	STEEL BOLLARD (REFER TO DETAIL XX.X)
	PROPOSED LOCATION OF NEW FIRE HYDRANT W/ STEEL BOLLARDS /REFER TO CIVIL DWGS	(X)	PARKING COUNT
	FIRE DEPARTMENT CONNECTION	FRS	FIRE ROUTE SIGN TO BE POSTED UNDER DESIGNATED MUNICIPAL BYLAW 2003-499. REFER TO DETAI 2/A102
	HOSE BIB (REFER TO MECHANICAL DWGS)	104.04	PROPOSED GRADING (REFER TO CIVIL DWGS)
	PAD MOUNTED HYDRO TRANSFORMER W/ STEEL BOLLARDS		CONDENSING UNIT ON 4" CONCRETE PAD (REFER TO MECH DWGS)
	DOUBLE HEADED LIGHT FIXTURE ON CONCRETE BASE /REFER TO ELECTRICAL		SNOW STORAGE AREA. (OWNER TO TAKE NECESSARY PRECAUTIONS W/ SNOW REMOVAL COMPANY)
	SINGLE HEADED LIGHT FIXTURE ON CONCRETE BASE /REFER TO ELECTRICAL DWGS		
	SINGLE HEADED LIGHT FIXTURE ON CONCRETE BASE W/ ELECTRICAL OUTLET /REFER TO ELECTRICAL DWGS		

CREDIT NOTES:

THIS SITEPLAN IS BASED UPONT AND MUST BE READ IN CONJUNCTION WITH THE SURVEY FOR THIS PROPERTY. MATAJ ARCHITECTS ACCEPTS NO RESPONSIBILITY FOR THE ACCURACY, OR COMPLETENESS OF THE DATA SUPPLIED AND SUCH DATA IS NOT INCLUDED UNDER SEALS OF CERTIFICATION, IF ANY.

LEGAL LAND DESCRIPTION:

BLOCK 3
REGISTERED PLAN 4M-1634
CITY OF OTTAWA

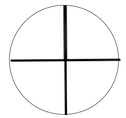
CREDIT NOTES:

TOPO SURVEYORS INFO:

ANNIS, O'SULLIVAN, VOLLEBEKK LTD.
14 CONCOURSE GATE, SUITE 500
NEPEAN, ONT. K2E 7S6
PHONE: (613) 727-0850 / FAX: (613) 727-1079
EMAIL: NEPEAN@ADVLTD.COM

SITE PLAN- GENERAL NOTES

1	ALL EXISTING PAVEMENT, CURBS, SIDEWALKS, DRIVEWAYS AN DBOULEVARD AREAS DISTURBED BY THE CONSTRUCTION ME BE REINSTATED TO THE SATISFACTION OF THE TOWN	5	THE OWNER/ CONTRACTOR SHALL SUPPLY ALL FIRE ROUTE AND BARRIER-FREE SIGNS AS SET OUT IN THE TOWN BY-LAWS AND DESIGN CRITERIA
		6	ALL EXTERIOR ILLUMINATION TO BE DIRECTED DOWNWARD AS WELL AS INWARD AND DESIGNED TO MAINAIN XERO CUTOFF LIGHT DISTRIBUTION AT THE PROPERTY LINE
2	A MINIMUM SETBACK OF 1.0m FROM STREET FURNITURE TO PROPOSED DRIVEWAYS AND SIDEWALKS SHALL BE MAINTAINED. ALL EXISTING STREET FURNITURE TO BE RELOATED BY THE CONTRACTOR/OWNER TO A SETBACK OF 1.0m. THE COST OF RELOCATION OF ANY UTILITY IS THE RESPONSIBILITY OF THE DEVELOPER/ OWNER	7	ALL DOWNSPOUTS TO BE CONNECTED TO THE STORM DRAINAGE SYSTEM
		8	ALL CONDENSING UNITS TO BE SCREENED ON THE GROUND FLOOR
3	THE CONTRACTOR/ OWNER IS RESPONSIBLE FOR ALL UTILITY LOCATES AND DAMAGE/ DISTURBANCE DURING CONSTRUCTION.	9	SEPARATE PERMITS ARE REQUIRED FOR ANY SIGNAGE ON THE PROPERY
4	ALL BARRIER-FREE ENTRANCES AND BARRIER FREE PATHS OF TRAVEL MUST COMPLY WITH O.B.C. 3.8.	10	WHERE POSSIBLE TREES ARE TO BE PROTECTED FROM CONSTRUCTION

Project North:	True North:
	

Key Plan:

No.	Date:	Issue/Revision	By:

Drawing Issues/Revisions:

Note:
ALL DIMENSIONS AND INFORMATION SHOWN ON THESE DRAWINGS MUST BE CHECKED AND VERIFIED ON SITE AND ANY DISCREPANCIES REPORTED TO THE ARCHITECT PRIOR TO CONSTRUCTION AND FABRICATION OF ITS COMPONENTS. SHOULD EXISTING CONDITIONS OR SERVICES BE FOUND TO VARY FROM THAT INDICATED ON THE DRAWINGS, THE ARCHITECT MUST BE NOTIFIED IMMEDIATELY.

FEATURES OF CONSTRUCTION NOT FULLY SHOWN ARE ASSUMED TO BE THE SAME CHARACTER AS THOSE NOTED FOR SIMILAR CONDITIONS.

UNLESS SPECIFICALLY NOTED OTHERWISE ON THE DRAWINGS, NO PROVISION HAS BEEN MADE IN THE DESIGN FOR CONDITIONS OCCURRING DURING CONSTRUCTION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ALL NECESSARY BRACING, SHORINGS, SHEET PILING OR OTHER TEMPORARY SUPPORTS, TO SAFEGUARD ALL EXISTING OR ADJACENT STRUCTURES AFFECTED BY THIS WORK.

ALL DRAWINGS AND RELATED DOCUMENTS SHALL REMAIN THE PROPERTY AND COPYRIGHT OF MATAJ ARCHITECTS INC.
USE LATEST REVISED DRAWINGS. DO NOT SCALE DRAWINGS.

WORK IN PROGRESS

MATAJ ARCHITECTS INC

Architect's Stamp

MATAJ ARCHITECTS INCORPORATED
206-418 Iroquois Shore Rd
Oakville Ontario
L6H 0X7
T.905.281.4444

Project:
HOLIDAY INN OTTAWA

140 Lusk St, Ottawa, ON

Sheet Title:
HOLIDAY INN - SITE PLAN

Design By:	Drawn By:	Approved By:
M.A.	S.F.	A.M.
Scale: AS SHOWN	Date: 22-10-15	Project No.: 22-027

Drawing No:
ASP-1

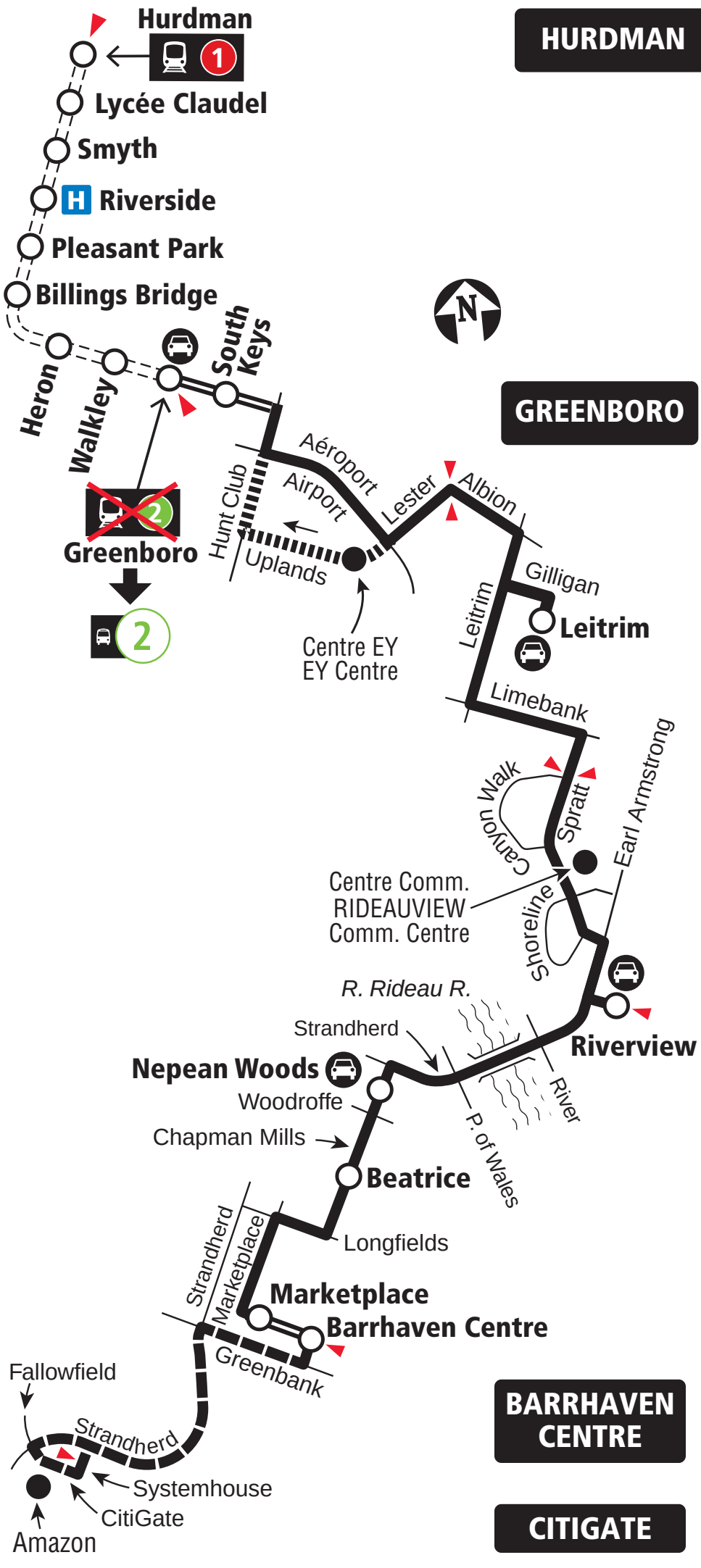
Drawing Series:
ARCHITECTURAL - SPA

Appendix C – OC Transpo Routes

99 Rapide

CITIGATE
BARRHAVEN CENTRE
HURDMAN
GREENBORO

7 days a week / 7 jours par semaine



Transitway & Station

Transitway & Station
Peak period / Période de pointe

Saturday & Sunday only / Sam. et dim. seulement

Limited service / Service limité

Park & Ride / Parc-o-bus

Timepoint / Heures de passage

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

OC Transpo

INFO 613-560-5000
octranspo.com

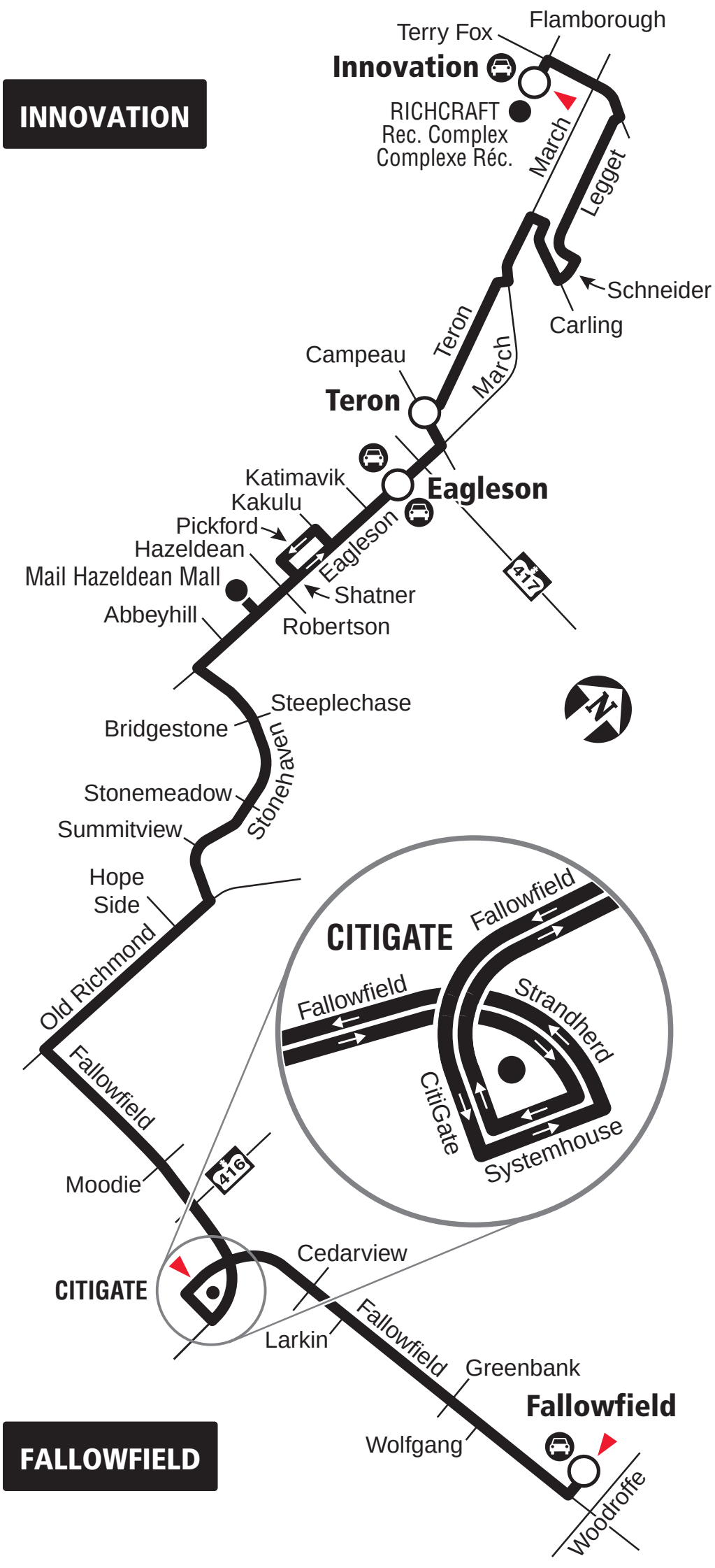
110 FALLOWFIELD / INNOVATION

Local

Monday to Friday / Lundi au vendredi

No late evening service

Aucun service en fin de soirée



Stations

Park & Ride / Parc-o-bus

Timepoint / Heures de passage

2021.06

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 **613-741-4390**

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

Security / Sécurité **613-741-2478**

Effective June 20, 2021

En vigueur 20 juin 2021

OC Transpo

INFO 613-741-4390
octranspo.com

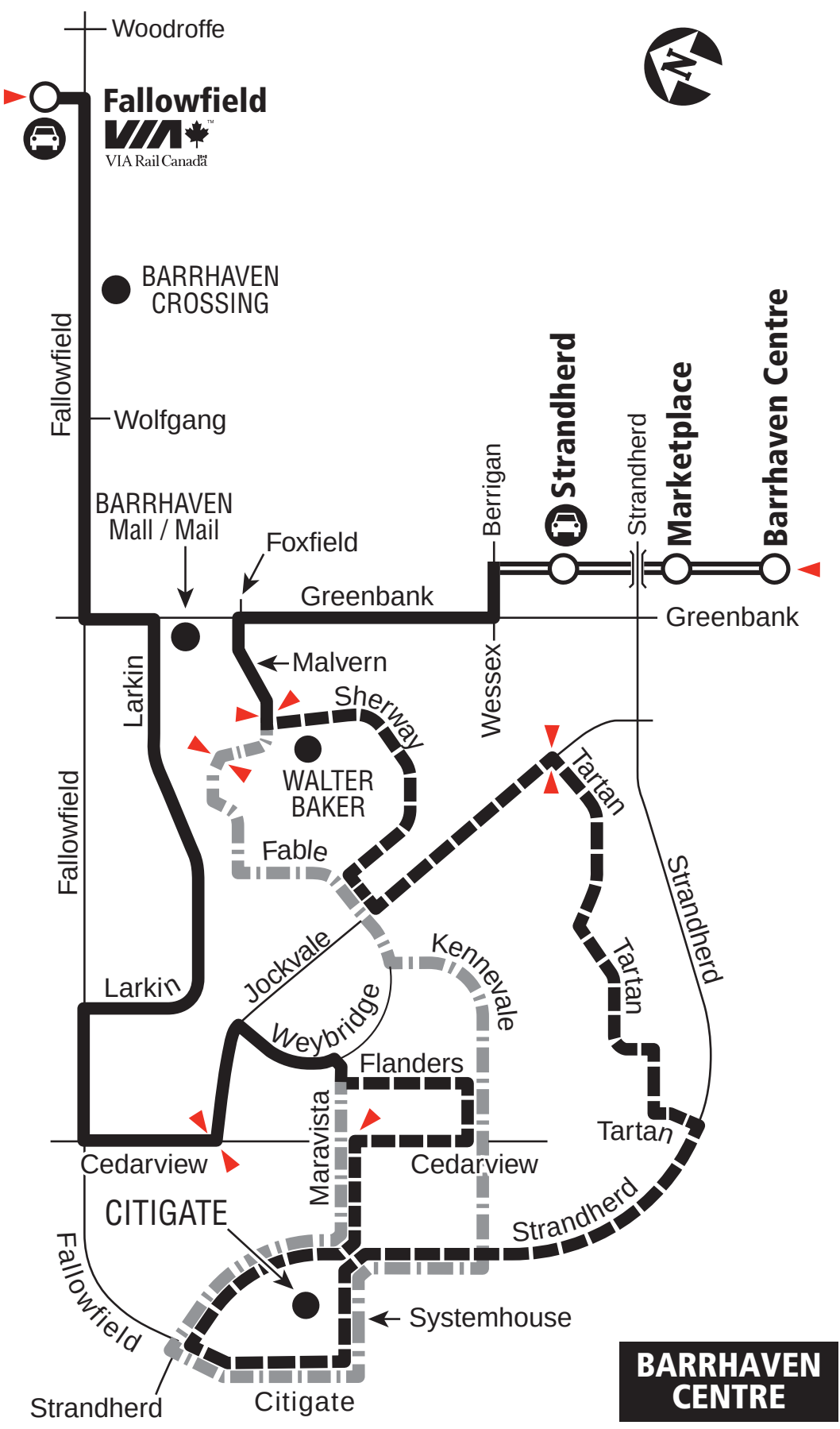
170

FALLOWFIELD
BARRHAVEN CENTRE

Local

7 days a week / 7 jours par semaine
All day service
Service toute la journée

FALLOWFIELD



BARRHAVEN CENTRE

	Transitway & Station
	Evenings and weekends only / Soirs et fins de semaine seulement
	No service evenings and weekends / Pas de service le soir et les fins de semaine
	Park & Ride / Parc-o-bus
	Timepoint / Heures de passage

2021.06

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 **613-741-4390**

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

Security / Sécurité **613-741-2478**

Effective June 20, 2021
En vigueur 20 juin 2021

OC Transpo

INFO 613-741-4390
octranspo.com

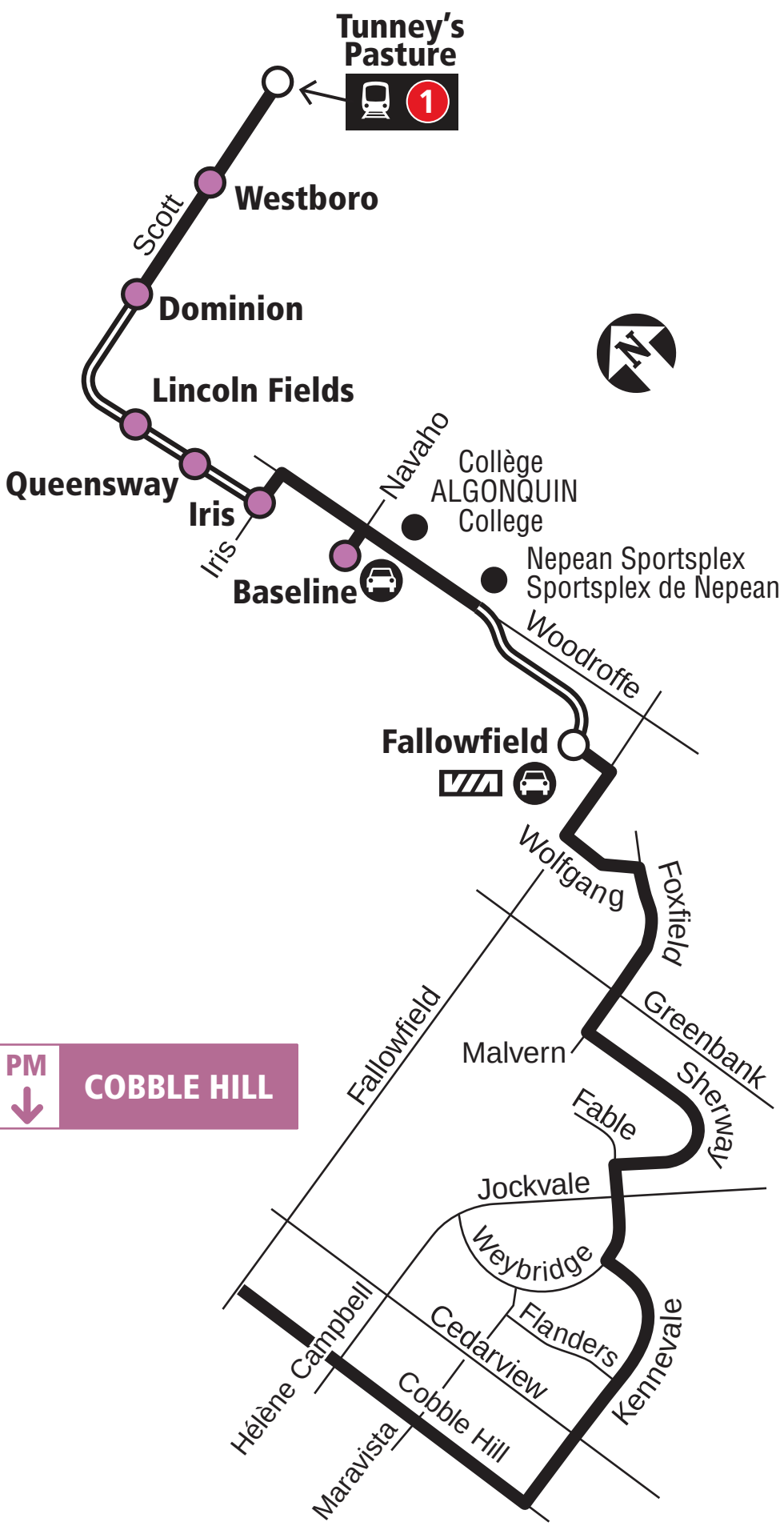
272 Connexion

COBBLE HILL
TUNNEY'S PASTURE

Monday to Friday / Lundi au vendredi

Peak periods only
Périodes de pointe seulement

AM ↑ TUNNEY'S PASTURE



PM ↓ COBBLE HILL

06.2022

Transitway & Station

Limited stops: Off only in AM / No stop in PM
Arrêts limités : débarquement en AM seul. / aucun arrêt en PM

Park & Ride / Parc-o-bus

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 June 26, 2022
En vigueur 26 juin 2022

OC Transpo

INFO 613-560-5000
octranspo.com

Appendix D – Collision Data

Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: FALLOWFIELD RD @ O'KEEFE CRT

Traffic Control: Stop sign **Total Collisions:** 1

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2020-Jul-31, Fri,03:34	Clear	SMV other	Non-fatal injury	Dry	South	Going ahead	Automobile, station wagon	Ran off road	0

Location: FALLOWFIELD RD @ STRANDHERD DR

Traffic Control: Traffic signal **Total Collisions:** 46

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Jan-13, Wed,15:11	Clear	Sideswipe	P.D. only	Wet	West	Changing lanes	Pick-up truck	Other motor vehicle	0
					West	Going ahead	Pick-up truck	Other motor vehicle	
2016-Jan-19, Tue,06:27	Clear	Rear end	P.D. only	Ice	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Feb-20, Sat,03:57	Rain	Rear end	P.D. only	Slush	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Jun-18, Sat,13:50	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Jan-12, Thu,06:25	Rain	Approaching	P.D. only	Wet	West	Unknown	Unknown	Other motor vehicle	0
					East	Going ahead	Pick-up truck	Other motor vehicle	
2017-Feb-26, Sun,14:09	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Changing lanes	Pick-up truck	Other motor vehicle	
2017-Apr-20, Thu,08:40	Clear	Rear end	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Turning left	Pick-up truck	Other motor vehicle	
2017-Jun-05, Mon,14:45	Clear	Rear end	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle	0
					South	Turning right	Automobile, station wagon	Other motor vehicle	
					South	Turning right	Automobile, station wagon	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: FALLOWFIELD RD @ STRANDHERD DR

Traffic Control: Traffic signal **Total Collisions:** 46

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2017-Jul-14, Fri,18:11	Clear	Rear end	P.D. only	Dry	South	Turning right	Pick-up truck	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
					South	Merging	Automobile, station wagon	Other motor vehicle	
2017-Jul-26, Wed,07:34	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Aug-12, Sat,18:56	Rain	Rear end	Non-fatal injury	Wet	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Aug-15, Tue,14:45	Clear	Angle	Non-fatal injury	Dry	East	Going ahead	Passenger van	Other motor vehicle	0
					North	Turning left	Pick-up truck	Other motor vehicle	
2017-Sep-20, Wed,20:10	Clear	Rear end	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle	0
					West	Turning right	Automobile, station wagon	Other motor vehicle	
2017-Oct-17, Tue,17:28	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Nov-17, Fri,12:02	Clear	Rear end	P.D. only	Dry	West	Going ahead	Pick-up truck	Other motor vehicle	0
					West	Stopped	Passenger van	Other motor vehicle	
2018-Jan-08, Mon,12:55	Snow	Rear end	Non-fatal injury	Slush	East	Slowing or stopping	Pick-up truck	Skidding/sliding	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Feb-08, Thu,15:46	Clear	Angle	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Pick-up truck	Other motor vehicle	
2018-Feb-09, Fri,17:45	Clear	Rear end	Non-fatal injury	Wet	West	Slowing or stopping	Automobile, station wagon	Skidding/sliding	0
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2018-Feb-16, Fri,15:35	Clear	Rear end	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Turning left	Automobile, station wagon	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: FALLOWFIELD RD @ STRANDHERD DR

Traffic Control: Traffic signal **Total Collisions:** 46

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2018-Mar-09, Fri,10:55	Snow	Angle	Non-fatal injury	Wet	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Turning left	Pick-up truck	Other motor vehicle	
2018-Apr-26, Thu,16:11	Clear	Rear end	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle	0
					South	Turning right	Passenger van	Other motor vehicle	
2018-Jun-19, Tue,21:05	Clear	Angle	Non-fatal injury	Dry	South	Going ahead	Motorcycle	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Jun-24, Sun,14:01	Clear	Rear end	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle	0
					South	Turning right	Automobile, station wagon	Other motor vehicle	
2018-Aug-16, Thu,12:28	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Sep-10, Mon,07:45	Clear	Sideswipe	P.D. only	Dry	West	Unknown	Unknown	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Sep-17, Mon,14:10	Clear	Rear end	P.D. only	Dry	South	Turning right	Pick-up truck	Other motor vehicle	0
					South	Turning right	Automobile, station wagon	Other motor vehicle	
2018-Oct-24, Wed,08:45	Clear	Rear end	Non-fatal injury	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Dec-22, Sat,08:04	Snow	Turning movement	P.D. only	Loose snow	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Turning left	Automobile, station wagon	Other motor vehicle	
2019-Jan-01, Tue,19:29	Clear	Sideswipe	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Municipal transit bus	Other motor vehicle	
2019-Jan-29, Tue,08:35	Clear	Rear end	P.D. only	Loose snow	East	Slowing or stopping	Truck - dump	Other motor vehicle	0
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					East	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: FALLOWFIELD RD @ STRANDHERD DR

Traffic Control: Traffic signal **Total Collisions:** 46

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2019-Jan-31, Thu,16:32	Clear	Rear end	P.D. only	Packed snow	South	Turning right	Automobile, station wagon	Other motor vehicle	0
					South	Turning right	Automobile, station wagon	Other motor vehicle	
2019-Feb-25, Mon,21:05	Clear	Turning movement	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Pick-up truck	Other motor vehicle	
2019-Mar-05, Tue,16:30	Snow	Rear end	P.D. only	Loose snow	South	Turning right	Automobile, station wagon	Other motor vehicle	0
					South	Turning right	Automobile, station wagon	Other motor vehicle	
2019-Apr-24, Wed,18:20	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Pick-up truck	Other motor vehicle	
2019-May-04, Sat,10:30	Clear	Rear end	P.D. only	Dry	South	Turning right	Pick-up truck	Other motor vehicle	0
					South	Turning right	Unknown	Other motor vehicle	
2019-Jul-30, Tue,08:03	Clear	Sideswipe	P.D. only	Dry	East	Turning left	Truck and trailer	Other motor vehicle	0
					East	Turning left	Automobile, station wagon	Other motor vehicle	
2019-Sep-14, Sat,15:00	Clear	Rear end	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle	0
					South	Turning right	Automobile, station wagon	Other motor vehicle	
2019-Sep-16, Mon,08:35	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Nov-16, Sat,13:41	Clear	Rear end	P.D. only	Dry	West	Going ahead	Unknown	Other motor vehicle	0
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2020-Jan-31, Fri,11:01	Clear	Angle	Non-fatal injury	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Pick-up truck	Other motor vehicle	
2020-Feb-20, Thu,07:15	Clear	Rear end	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle	0
					West	Turning right	Automobile, station wagon	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: FALLOWFIELD RD @ STRANDHERD DR

Traffic Control: Traffic signal **Total Collisions:** 46

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2020-Mar-08, Sun,10:29	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Truck - dump	Other motor vehicle	0
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2020-Jun-05, Fri,15:10	Clear	Rear end	P.D. only	Dry	West	Going ahead	Pick-up truck	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2020-Jul-27, Mon,16:27	Clear	Rear end	P.D. only	Dry	South	Turning right	Pick-up truck	Other motor vehicle	0
					South	Turning right	Automobile, station wagon	Other motor vehicle	
2020-Oct-01, Thu,11:26	Clear	Rear end	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle	0
					South	Turning right	Pick-up truck	Other motor vehicle	
2020-Dec-28, Mon,18:51	Clear	Sideswipe	P.D. only	Wet	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: FALLOWFIELD RD btwn O'KEEFE CRT & STRANDHERD DR

Traffic Control: No control **Total Collisions:** 1

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Apr-22, Fri,15:13	Rain	Rear end	P.D. only	Wet	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	

Appendix E – Traffic Count Data

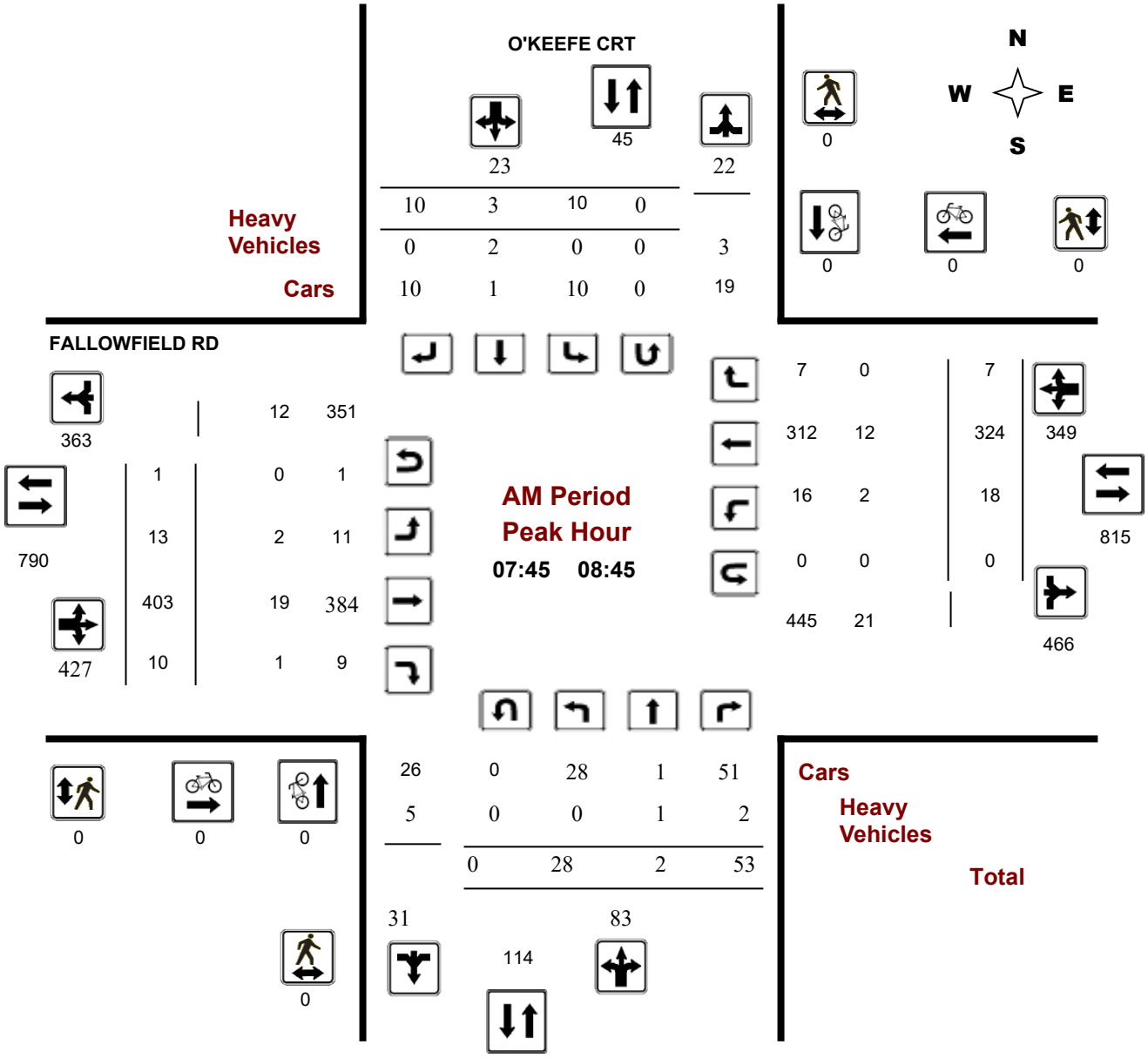
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

FALLOWFIELD RD @ O'KEEFE CRT

Survey Date: Wednesday, March 23, 2022 **WO No:** 40235

Start Time: 07:00 **Device:** Miovision



Comments

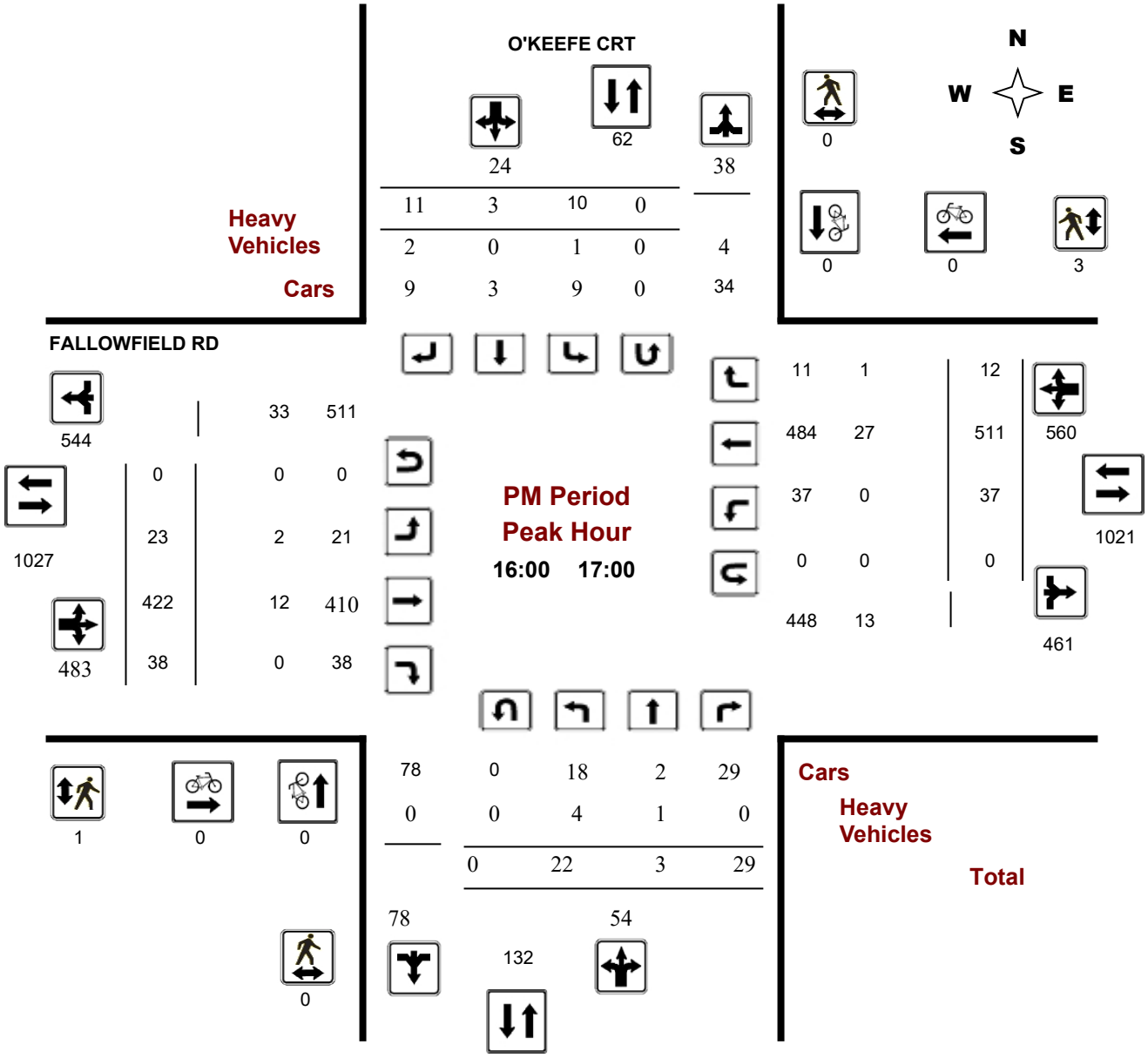
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

FALLOWFIELD RD @ O'KEEFE CRT

Survey Date: Wednesday, March 23, 2022 **WO No:** 40235

Start Time: 07:00 **Device:** Miovision



Comments

Appendix F – Intersection Capacity Analyses

Existing (2022) Traffic

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	1	12	55	3	28	13	396	9	16	339	8
Future Vol, veh/h	11	1	12	55	3	28	13	396	9	16	339	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	500	-	-	-	-	-	1400	-	-	600	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	200	0	0	33	7	15	5	11	0	1	0
Mvmt Flow	12	1	13	61	3	31	14	440	10	18	377	9

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	663	891	377	898	895	225	386	0	0	450	0	0
Stage 1	413	413	-	473	473	-	-	-	-	-	-	-
Stage 2	250	478	-	425	422	-	-	-	-	-	-	-
Critical Hdwy	7.3	9.5	6.2	7.3	6.995	7.005	4.325	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	8.5	-	6.5	5.995	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	8.5	-	6.1	5.995	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	5.9	3.3	3.5	4.3135	3.3665	2.3425	-	-	2.2	-	-
Pot Cap-1 Maneuver	364	111	674	250	239	765	1093	-	-	1121	-	-
Stage 1	620	317	-	546	497	-	-	-	-	-	-	-
Stage 2	738	285	-	611	527	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	338	108	674	238	232	765	1093	-	-	1121	-	-
Mov Cap-2 Maneuver	338	108	-	238	232	-	-	-	-	-	-	-
Stage 1	612	312	-	539	491	-	-	-	-	-	-	-
Stage 2	694	281	-	587	519	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.3	22	0.3	0.4
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1093	-	-	338	480	306	1121	-	-
HCM Lane V/C Ratio	0.013	-	-	0.036	0.03	0.312	0.016	-	-
HCM Control Delay (s)	8.3	-	-	16.1	12.7	22	8.3	-	-
HCM Lane LOS	A	-	-	C	B	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	1.3	0	-	-

Intersection	
Int Delay, s/veh	7.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	0	24	0	0	23
Future Vol, veh/h	0	0	24	0	0	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	0	27	0	0	26

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1	0	55	1
Stage 1	-	-	-	-	1	-
Stage 2	-	-	-	-	54	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1635	-	958	1090
Stage 1	-	-	-	-	1028	-
Stage 2	-	-	-	-	974	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1635	-	942	1090
Mov Cap-2 Maneuver	-	-	-	-	942	-
Stage 1	-	-	-	-	1028	-
Stage 2	-	-	-	-	957	-

Approach	EB	WB	NB
HCM Control Delay, s	0	7.2	8.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1090	-	-	1635	-
HCM Lane V/C Ratio	0.023	-	-	0.016	-
HCM Control Delay (s)	8.4	-	-	7.2	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	13	0	418	398	8
Future Vol, veh/h	0	13	0	418	398	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	250
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	14	0	464	442	9

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	442	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.2	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	620	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	620	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.9	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	620	-	-
HCM Lane V/C Ratio	-	0.023	-	-
HCM Control Delay (s)	-	10.9	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	3	11	22	3	29	23	422	38	37	511	12
Future Vol, veh/h	10	3	11	22	3	29	23	422	38	37	511	12
Conflicting Peds, #/hr	3	0	1	1	0	3	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	500	-	-	-	-	-	1400	-	-	600	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	10	0	18	18	33	0	9	3	0	0	5	8
Mvmt Flow	11	3	12	24	3	32	26	469	42	41	568	13

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	941	1213	569	1207	1205	259	581	0	0	511	0	0
Stage 1	650	650	-	542	542	-	-	-	-	-	-	-
Stage 2	291	563	-	665	663	-	-	-	-	-	-	-
Critical Hdwy	7.45	6.5	6.47	7.57	6.995	6.9	4.235	-	-	4.1	-	-
Critical Hdwy Stg 1	6.25	5.5	-	6.77	5.995	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.65	5.5	-	6.37	5.995	-	-	-	-	-	-	-
Follow-up Hdwy	3.595	4	3.471	3.671	4.3135	3.3	2.2855	-	-	2.2	-	-
Pot Cap-1 Maneuver	220	183	485	135	152	746	951	-	-	1065	-	-
Stage 1	440	468	-	461	460	-	-	-	-	-	-	-
Stage 2	674	512	-	416	401	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	196	171	485	123	142	744	951	-	-	1065	-	-
Mov Cap-2 Maneuver	196	171	-	123	142	-	-	-	-	-	-	-
Stage 1	428	450	-	449	448	-	-	-	-	-	-	-
Stage 2	621	498	-	387	386	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19.4	26.6	0.4	0.6
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	951	-	-	196	348	226	1065	-	-
HCM Lane V/C Ratio	0.027	-	-	0.057	0.045	0.265	0.039	-	-
HCM Control Delay (s)	8.9	-	-	24.5	15.8	26.6	8.5	-	-
HCM Lane LOS	A	-	-	C	C	D	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.1	1	0.1	-	-

Intersection	
Int Delay, s/veh	7.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	0	24	0	0	14
Future Vol, veh/h	0	0	24	0	0	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	0	27	0	0	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1	0	55	1
Stage 1	-	-	-	-	1	-
Stage 2	-	-	-	-	54	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1635	-	958	1090
Stage 1	-	-	-	-	1028	-
Stage 2	-	-	-	-	974	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1635	-	942	1090
Mov Cap-2 Maneuver	-	-	-	-	942	-
Stage 1	-	-	-	-	1028	-
Stage 2	-	-	-	-	957	-

Approach	EB	WB	NB
HCM Control Delay, s	0	7.2	8.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1090	-	-	1635	-
HCM Lane V/C Ratio	0.014	-	-	0.016	-
HCM Control Delay (s)	8.4	-	-	7.2	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	17	0	483	537	7
Future Vol, veh/h	0	17	0	483	537	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	250
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	19	0	537	597	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	597	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.2	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	507	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	507	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	507	-	-
HCM Lane V/C Ratio	-	0.037	-	-
HCM Control Delay (s)	-	12.4	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Future (2023) Background Traffic

Intersection	
Int Delay, s/veh	6.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	31	1	25	55	3	28	139	441	9	16	531	91
Future Vol, veh/h	31	1	25	55	3	28	139	441	9	16	531	91
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	500	-	-	-	-	-	1400	-	-	600	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	200	0	0	33	7	15	5	11	0	1	0
Mvmt Flow	31	1	25	55	3	28	139	441	9	16	531	91

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1063	1291	531	1346	1378	225	622	0	0	450	0	0
Stage 1	563	563	-	724	724	-	-	-	-	-	-	-
Stage 2	500	728	-	622	654	-	-	-	-	-	-	-
Critical Hdwy	7.3	9.5	6.2	7.3	6.995	7.005	4.325	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	8.5	-	6.5	5.995	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	8.5	-	6.1	5.995	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	5.9	3.3	3.5	4.3135	3.3665	2.3425	-	-	2.2	-	-
Pot Cap-1 Maneuver	191	49	552	120	117	765	885	-	-	1121	-	-
Stage 1	514	247	-	388	374	-	-	-	-	-	-	-
Stage 2	527	187	-	478	405	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	156	41	552	98	97	765	885	-	-	1121	-	-
Mov Cap-2 Maneuver	156	41	-	98	97	-	-	-	-	-	-	-
Stage 1	433	244	-	327	315	-	-	-	-	-	-	-
Stage 2	424	158	-	448	399	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	25.4	67.7	2.3	0.2
HCM LOS	D	F		

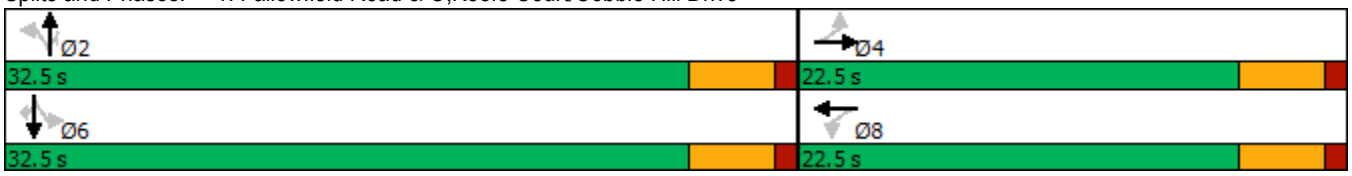
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	885	-	-	156	373	137	1121	-	-
HCM Lane V/C Ratio	0.157	-	-	0.199	0.07	0.628	0.014	-	-
HCM Control Delay (s)	9.8	-	-	33.7	15.4	67.7	8.3	-	-
HCM Lane LOS	A	-	-	D	C	F	A	-	-
HCM 95th %tile Q(veh)	0.6	-	-	0.7	0.2	3.3	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	1	25	55	3	28	139	441	9	16	531	91
Future Volume (vph)	31	1	25	55	3	28	139	441	9	16	531	91
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0		0.0	0.0		0.0	140.0		0.0	60.0		25.0
Storage Lanes	1		0	0		0	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. 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
Frt		0.856			0.956				0.850			0.850
Flt Protected	0.950				0.969		0.950			0.950		
Satd. Flow (prot)	1729	1447	0	0	1630	0	1503	1733	1394	1729	1802	1547
Flt Permitted	0.909				0.791		0.444			0.507		
Satd. Flow (perm)	1654	1447	0	0	1331	0	703	1733	1394	923	1802	1547
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25			28				30			91
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		187.0			55.0			184.6			116.3	
Travel Time (s)		13.5			4.0			8.3			5.2	
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%	200%	0%	0%	33%	7%	15%	5%	11%	0%	1%	0%
Adj. Flow (vph)	31	1	25	55	3	28	139	441	9	16	531	91
Shared Lane Traffic (%)												
Lane Group Flow (vph)	31	26	0	0	86	0	139	441	9	16	531	91
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5		22.5	22.5		32.5	32.5	32.5	32.5	32.5	32.5
Total Split (%)	40.9%	40.9%		40.9%	40.9%		59.1%	59.1%	59.1%	59.1%	59.1%	59.1%
Maximum Green (s)	18.0	18.0		18.0	18.0		28.0	28.0	28.0	28.0	28.0	28.0
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
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)	4.5	4.5			4.5		4.5	4.5	4.5	4.5	4.5	4.5
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	3.0
Recall Mode	None	None		None	None		Min	Min	Min	Min	Min	Min
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)	7.3	7.3			7.4		25.3	25.3	25.3	25.3	25.3	25.3
Actuated g/C Ratio	0.21	0.21			0.21		0.73	0.73	0.73	0.73	0.73	0.73
v/c Ratio	0.09	0.08			0.28		0.27	0.35	0.01	0.02	0.40	0.08
Control Delay	13.6	7.6			12.6		6.4	5.2	0.7	4.2	5.6	1.5
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0	0.0	0.0	0.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	13.6	7.6			12.6		6.4	5.2	0.7	4.2	5.6	1.5
LOS	B	A			B		A	A	A	A	A	A
Approach Delay		10.9			12.6			5.5			5.0	
Approach LOS		B			B			A			A	
Queue Length 50th (m)	1.6	0.1			3.0		3.7	12.5	0.0	0.4	16.0	0.0
Queue Length 95th (m)	6.9	4.3			12.6		13.0	30.9	0.5	2.0	38.8	3.5
Internal Link Dist (m)		163.0			31.0			160.6			92.3	
Turn Bay Length (m)	50.0						140.0			60.0		25.0
Base Capacity (vph)	901	799			738		585	1442	1165	768	1500	1303
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	0.03	0.03			0.12		0.24	0.31	0.01	0.02	0.35	0.07

Intersection Summary			
Area Type:	Other		
Cycle Length: 55			
Actuated Cycle Length: 34.5			
Natural Cycle: 55			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.40			
Intersection Signal Delay: 5.9		Intersection LOS: A	
Intersection Capacity Utilization 60.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Fallowfield Road & O;Keefe Court/Cobble Hill Drive



Intersection	
Int Delay, s/veh	2.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	23	0	64	169	0	33
Future Vol, veh/h	23	0	64	169	0	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	23	0	64	169	0	33

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	23	0	320	23
Stage 1	-	-	-	-	23	-
Stage 2	-	-	-	-	297	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1605	-	678	1060
Stage 1	-	-	-	-	1005	-
Stage 2	-	-	-	-	758	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1605	-	648	1060
Mov Cap-2 Maneuver	-	-	-	-	648	-
Stage 1	-	-	-	-	1005	-
Stage 2	-	-	-	-	725	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2	8.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1060	-	-	1605	-
HCM Lane V/C Ratio	0.031	-	-	0.04	-
HCM Control Delay (s)	8.5	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	28	0	590	591	21
Future Vol, veh/h	0	28	0	590	591	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	28	0	590	591	21

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	306	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	696	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	696	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	696	-	-
HCM Lane V/C Ratio	-	0.04	-	-
HCM Control Delay (s)	-	10.4	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	32	13	2	43
Future Vol, veh/h	0	0	32	13	2	43
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	0	32	13	2	43

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	86	39	0	0	45	0
Stage 1	39	-	-	-	-	-
Stage 2	47	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	920	1038	-	-	1576	-
Stage 1	989	-	-	-	-	-
Stage 2	981	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	919	1038	-	-	1576	-
Mov Cap-2 Maneuver	919	-	-	-	-	-
Stage 1	989	-	-	-	-	-
Stage 2	980	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1576	-
HCM Lane V/C Ratio	-	-	-	0.001	-
HCM Control Delay (s)	-	-	0	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	8.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	110	3	105	22	3	29	64	572	38	37	587	23
Future Vol, veh/h	110	3	105	22	3	29	64	572	38	37	587	23
Conflicting Peds, #/hr	3	0	1	1	0	3	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	500	-	-	-	-	-	1400	-	-	600	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	10	0	18	18	33	0	9	3	0	0	5	8
Mvmt Flow	110	3	105	22	3	29	64	572	38	37	587	23

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1080	1399	588	1447	1403	308	610	0	0	610	0	0
Stage 1	661	661	-	719	719	-	-	-	-	-	-	-
Stage 2	419	738	-	728	684	-	-	-	-	-	-	-
Critical Hdwy	7.45	6.5	6.47	7.57	6.995	6.9	4.235	-	-	4.1	-	-
Critical Hdwy Stg 1	6.25	5.5	-	6.77	5.995	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.65	5.5	-	6.37	5.995	-	-	-	-	-	-	-
Follow-up Hdwy	3.595	4	3.471	3.671	4.3135	3.3	2.2855	-	-	2.2	-	-
Pot Cap-1 Maneuver	175	142	472	89	113	694	927	-	-	979	-	-
Stage 1	434	463	-	358	376	-	-	-	-	-	-	-
Stage 2	565	427	-	383	391	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	151	127	472	62	101	692	927	-	-	979	-	-
Mov Cap-2 Maneuver	151	127	-	62	101	-	-	-	-	-	-	-
Stage 1	404	445	-	333	350	-	-	-	-	-	-	-
Stage 2	498	398	-	284	376	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	45.8	52.8	0.9	0.5
HCM LOS	E	F		

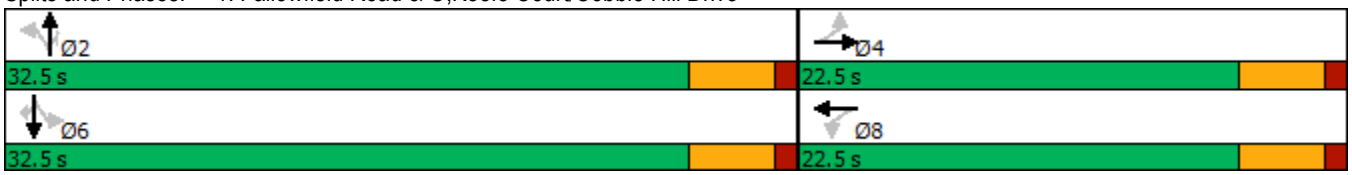
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	927	-	-	151	439	127	979	-	-
HCM Lane V/C Ratio	0.069	-	-	0.728	0.246	0.425	0.038	-	-
HCM Control Delay (s)	9.2	-	-	75.2	15.9	52.8	8.8	-	-
HCM Lane LOS	A	-	-	F	C	F	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	4.4	1	1.8	0.1	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	3	105	22	3	29	64	572	38	37	587	23
Future Volume (vph)	110	3	105	22	3	29	64	572	38	37	587	23
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0		0.0	0.0		0.0	140.0		0.0	60.0		25.0
Storage Lanes	1		0	0		0	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. 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
Ped Bike Factor	1.00	0.98			0.99							
Frt		0.854			0.927				0.850			0.850
Flt Protected	0.950				0.980		0.950			0.950		
Satd. Flow (prot)	1572	1295	0	0	1495	0	1586	1767	1547	1729	1733	1432
Flt Permitted	0.722				0.841		0.372			0.383		
Satd. Flow (perm)	1190	1295	0	0	1282	0	621	1767	1547	697	1733	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		105			29				38			30
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		187.0			55.0			184.6			116.3	
Travel Time (s)		13.5			4.0			8.3			5.2	
Confl. Peds. (#/hr)	3		1	1		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 (%)	10%	0%	18%	18%	33%	0%	9%	3%	0%	0%	5%	8%
Adj. Flow (vph)	110	3	105	22	3	29	64	572	38	37	587	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	110	108	0	0	54	0	64	572	38	37	587	23
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5		22.5	22.5		32.5	32.5	32.5	32.5	32.5	32.5
Total Split (%)	40.9%	40.9%		40.9%	40.9%		59.1%	59.1%	59.1%	59.1%	59.1%	59.1%
Maximum Green (s)	18.0	18.0		18.0	18.0		28.0	28.0	28.0	28.0	28.0	28.0
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
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)	4.5	4.5			4.5		4.5	4.5	4.5	4.5	4.5	4.5
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	3.0
Recall Mode	None	None		None	None		Min	Min	Min	Min	Min	Min
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)	9.3	9.3			9.3		23.6	23.6	23.6	23.6	23.6	23.6
Actuated g/C Ratio	0.24	0.24			0.24		0.62	0.62	0.62	0.62	0.62	0.62
v/c Ratio	0.38	0.27			0.16		0.17	0.52	0.04	0.09	0.55	0.03

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	17.7	6.1			9.6		7.0	8.8	2.4	6.0	9.2	2.3
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.7	6.1			9.6		7.0	8.8	2.4	6.0	9.2	2.3
LOS	B	A			A		A	A	A	A	A	A
Approach Delay		11.9			9.6			8.3			8.8	
Approach LOS		B			A			A			A	
Queue Length 50th (m)	5.2	0.2			1.1		1.8	21.1	0.0	1.0	22.1	0.0
Queue Length 95th (m)	18.6	8.7			8.0		7.8	55.2	2.8	4.8	58.6	1.9
Internal Link Dist (m)		163.0			31.0			160.6			92.3	
Turn Bay Length (m)	50.0						140.0			60.0		25.0
Base Capacity (vph)	588	693			648		472	1344	1186	530	1319	1097
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	0.16			0.08		0.14	0.43	0.03	0.07	0.45	0.02

Intersection Summary			
Area Type:	Other		
Cycle Length: 55			
Actuated Cycle Length: 38.2			
Natural Cycle: 55			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 9.0		Intersection LOS: A	
Intersection Capacity Utilization 61.2%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Fallowfield Road & O;Keefe Court/Cobble Hill Drive



Intersection	
Int Delay, s/veh	2.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	171	0	53	23	0	37
Future Vol, veh/h	171	0	53	23	0	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	171	0	53	23	0	37

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	171	0	300	171
Stage 1	-	-	-	-	171	-
Stage 2	-	-	-	-	129	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1418	-	696	878
Stage 1	-	-	-	-	864	-
Stage 2	-	-	-	-	902	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1418	-	670	878
Mov Cap-2 Maneuver	-	-	-	-	670	-
Stage 1	-	-	-	-	864	-
Stage 2	-	-	-	-	868	-

Approach	EB	WB	NB
HCM Control Delay, s	0	5.3	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	878	-	-	1418	-
HCM Lane V/C Ratio	0.042	-	-	0.037	-
HCM Control Delay (s)	9.3	-	-	7.6	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	54	0	675	690	25
Future Vol, veh/h	0	54	0	675	690	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	54	0	675	690	25

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	358	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	644	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	644	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.1	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	644	-	-
HCM Lane V/C Ratio	-	0.084	-	-
HCM Control Delay (s)	-	11.1	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.3	-	-

Intersection	
Int Delay, s/veh	0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	30	17	12	50
Future Vol, veh/h	0	0	30	17	12	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	0	30	17	12	50

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	113	39	0	0	47	0
Stage 1	39	-	-	-	-	-
Stage 2	74	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	888	1038	-	-	1573	-
Stage 1	989	-	-	-	-	-
Stage 2	954	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	881	1038	-	-	1573	-
Mov Cap-2 Maneuver	881	-	-	-	-	-
Stage 1	989	-	-	-	-	-
Stage 2	946	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	1.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1573	-
HCM Lane V/C Ratio	-	-	-	0.008	-
HCM Control Delay (s)	-	-	0	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	-	0	-

Future (2028) Background Traffic

Intersection	
Int Delay, s/veh	11.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	31	1	25	55	3	28	139	504	9	16	726	91
Future Vol, veh/h	31	1	25	55	3	28	139	504	9	16	726	91
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	500	-	-	-	-	-	1400	-	-	600	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	200	0	0	33	7	15	5	11	0	1	0
Mvmt Flow	31	1	25	55	3	28	139	504	9	16	726	91

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1290	1549	726	1604	1636	257	817	0	0	513	0	0
Stage 1	758	758	-	787	787	-	-	-	-	-	-	-
Stage 2	532	791	-	817	849	-	-	-	-	-	-	-
Critical Hdwy	7.3	9.5	6.2	7.3	6.995	7.005	4.325	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	8.5	-	6.5	5.995	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	8.5	-	6.1	5.995	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	5.9	3.3	3.5	4.3135	3.3665	2.3425	-	-	2.2	-	-
Pot Cap-1 Maneuver	132	28	428	79	79	730	742	-	-	1063	-	-
Stage 1	402	178	-	355	348	-	-	-	-	-	-	-
Stage 2	504	168	-	373	323	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	104	22	428	61	63	730	742	-	-	1063	-	-
Mov Cap-2 Maneuver	104	22	-	61	63	-	-	-	-	-	-	-
Stage 1	327	175	-	289	283	-	-	-	-	-	-	-
Stage 2	390	137	-	344	318	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	38.8	179.5	2.3	0.2
HCM LOS	E	F		

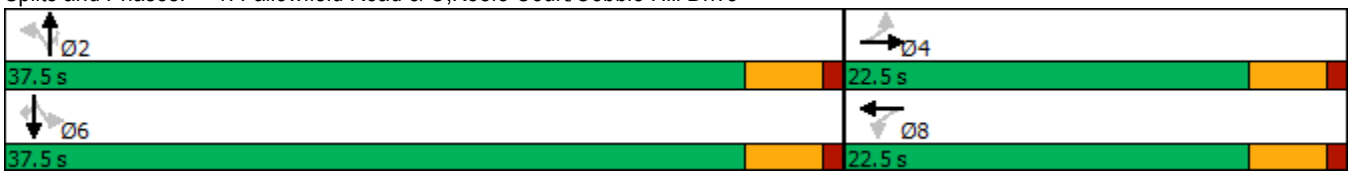
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	742	-	-	104	250	87	1063	-	-
HCM Lane V/C Ratio	0.187	-	-	0.298	0.104	0.989	0.015	-	-
HCM Control Delay (s)	11	-	-	53.7	21.1	179.5	8.4	-	-
HCM Lane LOS	B	-	-	F	C	F	A	-	-
HCM 95th %tile Q(veh)	0.7	-	-	1.1	0.3	5.6	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	1	25	55	3	28	139	504	9	16	726	91
Future Volume (vph)	31	1	25	55	3	28	139	504	9	16	726	91
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0		0.0	0.0		0.0	140.0		0.0	60.0		25.0
Storage Lanes	1		0	0		0	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. 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
Frt		0.856			0.956				0.850			0.850
Flt Protected	0.950				0.969		0.950			0.950		
Satd. Flow (prot)	1729	1447	0	0	1630	0	1503	1733	1394	1729	1802	1547
Flt Permitted	0.976				0.791		0.330			0.466		
Satd. Flow (perm)	1776	1447	0	0	1331	0	522	1733	1394	848	1802	1547
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25			28				27			72
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		187.0			55.0			184.6			116.3	
Travel Time (s)		13.5			4.0			8.3			5.2	
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%	200%	0%	0%	33%	7%	15%	5%	11%	0%	1%	0%
Adj. Flow (vph)	31	1	25	55	3	28	139	504	9	16	726	91
Shared Lane Traffic (%)												
Lane Group Flow (vph)	31	26	0	0	86	0	139	504	9	16	726	91
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5		22.5	22.5		37.5	37.5	37.5	37.5	37.5	37.5
Total Split (%)	37.5%	37.5%		37.5%	37.5%		62.5%	62.5%	62.5%	62.5%	62.5%	62.5%
Maximum Green (s)	18.0	18.0		18.0	18.0		33.0	33.0	33.0	33.0	33.0	33.0
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
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)	4.5	4.5			4.5		4.5	4.5	4.5	4.5	4.5	4.5
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	3.0
Recall Mode	None	None		None	None		Min	Min	Min	Min	Min	Min
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)	7.7	7.7			7.8		32.6	32.6	32.6	32.6	32.6	32.6
Actuated g/C Ratio	0.18	0.18			0.19		0.78	0.78	0.78	0.78	0.78	0.78
v/c Ratio	0.10	0.09			0.32		0.34	0.37	0.01	0.02	0.52	0.07
Control Delay	17.8	9.5			16.6		7.5	4.8	0.8	3.7	6.2	1.7
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0	0.0	0.0	0.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	17.8	9.5			16.6		7.5	4.8	0.8	3.7	6.2	1.7
LOS	B	A			B		A	A	A	A	A	A
Approach Delay		14.1			16.6			5.3			5.6	
Approach LOS		B			B			A			A	
Queue Length 50th (m)	2.1	0.1			4.1		4.2	15.8	0.0	0.4	27.1	0.4
Queue Length 95th (m)	7.8	4.8			14.1		16.3	37.0	0.5	2.0	63.6	4.0
Internal Link Dist (m)		163.0			31.0			160.6			92.3	
Turn Bay Length (m)	50.0						140.0			60.0		25.0
Base Capacity (vph)	817	679			627		418	1387	1121	678	1442	1252
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	0.04	0.04			0.14		0.33	0.36	0.01	0.02	0.50	0.07

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 41.7			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.52			
Intersection Signal Delay: 6.4		Intersection LOS: A	
Intersection Capacity Utilization 71.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Fallowfield Road & O;Keefe Court/Cobble Hill Drive



Intersection	
Int Delay, s/veh	2.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	23	0	64	169	0	33
Future Vol, veh/h	23	0	64	169	0	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	23	0	64	169	0	33

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	23	0	320	23
Stage 1	-	-	-	-	23	-
Stage 2	-	-	-	-	297	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1605	-	678	1060
Stage 1	-	-	-	-	1005	-
Stage 2	-	-	-	-	758	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1605	-	648	1060
Mov Cap-2 Maneuver	-	-	-	-	648	-
Stage 1	-	-	-	-	1005	-
Stage 2	-	-	-	-	725	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2	8.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1060	-	-	1605	-
HCM Lane V/C Ratio	0.031	-	-	0.04	-
HCM Control Delay (s)	8.5	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	28	0	655	792	21
Future Vol, veh/h	0	28	0	655	792	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	28	0	655	792	21

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	407	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	599	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	599	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.3	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	599	-	-
HCM Lane V/C Ratio	-	0.047	-	-
HCM Control Delay (s)	-	11.3	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	32	13	2	43
Future Vol, veh/h	0	0	32	13	2	43
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	0	32	13	2	43

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	86	39	0	0	45	0
Stage 1	39	-	-	-	-	-
Stage 2	47	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	920	1038	-	-	1576	-
Stage 1	989	-	-	-	-	-
Stage 2	981	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	919	1038	-	-	1576	-
Mov Cap-2 Maneuver	919	-	-	-	-	-
Stage 1	989	-	-	-	-	-
Stage 2	980	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1576	-
HCM Lane V/C Ratio	-	-	-	0.001	-
HCM Control Delay (s)	-	-	0	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	-	0	-

Intersection	
Int Delay, s/veh	13.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	110	3	105	22	3	29	64	737	38	37	658	23
Future Vol, veh/h	110	3	105	22	3	29	64	737	38	37	658	23
Conflicting Peds, #/hr	3	0	1	1	0	3	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	500	-	-	-	-	-	1400	-	-	600	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	10	0	18	18	33	0	9	3	0	0	5	8
Mvmt Flow	110	3	105	22	3	29	64	737	38	37	658	23

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1233	1635	659	1683	1639	391	681	0	0	775	0	0
Stage 1	732	732	-	884	884	-	-	-	-	-	-	-
Stage 2	501	903	-	799	755	-	-	-	-	-	-	-
Critical Hdwy	7.45	6.5	6.47	7.57	6.995	6.9	4.235	-	-	4.1	-	-
Critical Hdwy Stg 1	6.25	5.5	-	6.77	5.995	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.65	5.5	-	6.37	5.995	-	-	-	-	-	-	-
Follow-up Hdwy	3.595	4	3.471	3.671	4.3135	3.3	2.2855	-	-	2.2	-	-
Pot Cap-1 Maneuver	136	102	429	60	79	614	871	-	-	850	-	-
Stage 1	396	430	-	282	310	-	-	-	-	-	-	-
Stage 2	504	359	-	349	361	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	114	90	429	40	70	612	871	-	-	850	-	-
Mov Cap-2 Maneuver	114	90	-	40	70	-	-	-	-	-	-	-
Stage 1	367	411	-	261	287	-	-	-	-	-	-	-
Stage 2	439	333	-	250	345	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	82.5	104.8	0.7	0.5
HCM LOS	F	F		

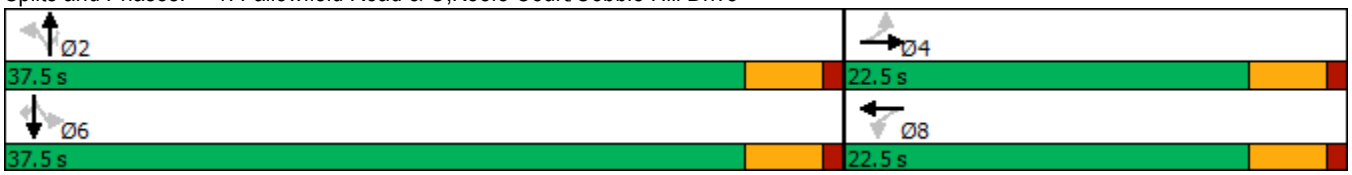
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	871	-	-	114	388	84	850	-	-
HCM Lane V/C Ratio	0.073	-	-	0.965	0.278	0.643	0.044	-	-
HCM Control Delay (s)	9.5	-	-	146	17.8	104.8	9.4	-	-
HCM Lane LOS	A	-	-	F	C	F	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	6.2	1.1	3	0.1	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	3	105	22	3	29	64	737	38	37	658	23
Future Volume (vph)	110	3	105	22	3	29	64	737	38	37	658	23
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0		0.0	0.0		0.0	140.0		0.0	60.0		25.0
Storage Lanes	1		0	0		0	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. 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
Ped Bike Factor	1.00	0.98			0.99							
Frt		0.854			0.927				0.850			0.850
Flt Protected	0.950				0.980		0.950			0.950		
Satd. Flow (prot)	1572	1295	0	0	1494	0	1586	1767	1547	1729	1733	1432
Flt Permitted	0.722				0.842		0.334			0.282		
Satd. Flow (perm)	1189	1295	0	0	1283	0	558	1767	1547	513	1733	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		105			29				38			27
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		187.0			55.0			184.6			116.3	
Travel Time (s)		13.5			4.0			8.3			5.2	
Confl. Peds. (#/hr)	3		1	1		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 (%)	10%	0%	18%	18%	33%	0%	9%	3%	0%	0%	5%	8%
Adj. Flow (vph)	110	3	105	22	3	29	64	737	38	37	658	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	110	108	0	0	54	0	64	737	38	37	658	23
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5		22.5	22.5		37.5	37.5	37.5	37.5	37.5	37.5
Total Split (%)	37.5%	37.5%		37.5%	37.5%		62.5%	62.5%	62.5%	62.5%	62.5%	62.5%
Maximum Green (s)	18.0	18.0		18.0	18.0		33.0	33.0	33.0	33.0	33.0	33.0
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
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)	4.5	4.5			4.5		4.5	4.5	4.5	4.5	4.5	4.5
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	3.0
Recall Mode	None	None		None	None		Min	Min	Min	Min	Min	Min
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)	9.8	9.8			9.8		28.8	28.8	28.8	28.8	28.8	28.8
Actuated g/C Ratio	0.22	0.22			0.22		0.66	0.66	0.66	0.66	0.66	0.66
v/c Ratio	0.41	0.29			0.17		0.17	0.63	0.04	0.11	0.58	0.02

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	21.5	7.0			11.4		6.8	10.3	2.2	6.1	9.2	2.3
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.5	7.0			11.4		6.8	10.3	2.2	6.1	9.2	2.3
LOS	C	A			B		A	B	A	A	A	A
Approach Delay		14.3			11.4			9.6			8.9	
Approach LOS		B			B			A			A	
Queue Length 50th (m)	6.8	0.2			1.4		1.9	33.8	0.0	1.1	28.3	0.0
Queue Length 95th (m)	20.8	9.6			8.8		8.0	84.9	2.7	5.0	71.1	2.0
Internal Link Dist (m)		163.0			31.0			160.6			92.3	
Turn Bay Length (m)	50.0						140.0			60.0		25.0
Base Capacity (vph)	520	625			577		428	1357	1197	394	1331	1106
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	0.21	0.17			0.09		0.15	0.54	0.03	0.09	0.49	0.02

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 43.7			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay: 9.9		Intersection LOS: A	
Intersection Capacity Utilization 69.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Fallowfield Road & O;Keefe Court/Cobble Hill Drive



Intersection	
Int Delay, s/veh	2.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	171	0	53	23	0	37
Future Vol, veh/h	171	0	53	23	0	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	171	0	53	23	0	37

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	171	0	300	171
Stage 1	-	-	-	-	171	-
Stage 2	-	-	-	-	129	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1418	-	696	878
Stage 1	-	-	-	-	864	-
Stage 2	-	-	-	-	902	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1418	-	670	878
Mov Cap-2 Maneuver	-	-	-	-	670	-
Stage 1	-	-	-	-	864	-
Stage 2	-	-	-	-	868	-

Approach	EB	WB	NB
HCM Control Delay, s	0	5.3	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	878	-	-	1418	-
HCM Lane V/C Ratio	0.042	-	-	0.037	-
HCM Control Delay (s)	9.3	-	-	7.6	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	54	0	847	763	25
Future Vol, veh/h	0	54	0	847	763	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	54	0	847	763	25

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	394	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	611	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	611	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.5	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	611	-	-
HCM Lane V/C Ratio	-	0.088	-	-
HCM Control Delay (s)	-	11.5	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.3	-	-

Intersection	
Int Delay, s/veh	0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	30	17	12	50
Future Vol, veh/h	0	0	30	17	12	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	0	30	17	12	50

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	113	39	0	0	47	0
Stage 1	39	-	-	-	-	-
Stage 2	74	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	888	1038	-	-	1573	-
Stage 1	989	-	-	-	-	-
Stage 2	954	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	881	1038	-	-	1573	-
Mov Cap-2 Maneuver	881	-	-	-	-	-
Stage 1	989	-	-	-	-	-
Stage 2	946	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	1.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1573	-
HCM Lane V/C Ratio	-	-	-	0.008	-
HCM Control Delay (s)	-	-	0	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	-	0	-

Future (2023) Total Traffic

Intersection	
Int Delay, s/veh	7.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	37	1	27	55	3	28	151	441	9	16	531	95
Future Vol, veh/h	37	1	27	55	3	28	151	441	9	16	531	95
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	500	-	-	-	-	-	1400	-	-	600	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	200	0	0	33	7	15	5	11	0	1	0
Mvmt Flow	37	1	27	55	3	28	151	441	9	16	531	95

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1087	1315	531	1373	1406	225	626	0	0	450	0	0
Stage 1	563	563	-	748	748	-	-	-	-	-	-	-
Stage 2	524	752	-	625	658	-	-	-	-	-	-	-
Critical Hdwy	7.3	9.5	6.2	7.3	6.995	7.005	4.325	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	8.5	-	6.5	5.995	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	8.5	-	6.1	5.995	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	5.9	3.3	3.5	4.3135	3.3665	2.3425	-	-	2.2	-	-
Pot Cap-1 Maneuver	184	46	552	115	112	765	882	-	-	1121	-	-
Stage 1	514	247	-	375	364	-	-	-	-	-	-	-
Stage 2	510	180	-	476	403	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	149	38	552	92	92	765	882	-	-	1121	-	-
Mov Cap-2 Maneuver	149	38	-	92	92	-	-	-	-	-	-	-
Stage 1	426	244	-	311	302	-	-	-	-	-	-	-
Stage 2	403	149	-	444	397	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	27.7	76.2	2.5	0.2
HCM LOS	D	F		

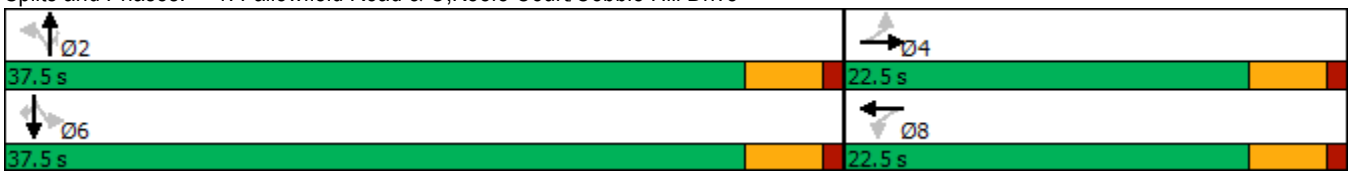
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	882	-	-	149	372	129	1121	-	-
HCM Lane V/C Ratio	0.171	-	-	0.248	0.075	0.667	0.014	-	-
HCM Control Delay (s)	9.9	-	-	37	15.5	76.2	8.3	-	-
HCM Lane LOS	A	-	-	E	C	F	A	-	-
HCM 95th %tile Q(veh)	0.6	-	-	0.9	0.2	3.6	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	1	27	55	3	28	151	441	9	16	531	95
Future Volume (vph)	37	1	27	55	3	28	151	441	9	16	531	95
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0		0.0	0.0		0.0	140.0		0.0	60.0		25.0
Storage Lanes	1		0	0		0	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. 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
Frt		0.855			0.956				0.850			0.850
Flt Protected	0.950				0.969		0.950			0.950		
Satd. Flow (prot)	1729	1452	0	0	1630	0	1503	1733	1394	1729	1802	1547
Flt Permitted	0.889				0.789		0.443			0.507		
Satd. Flow (perm)	1618	1452	0	0	1327	0	701	1733	1394	923	1802	1547
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		27			28				27			95
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		187.0			55.0			184.6			116.3	
Travel Time (s)		13.5			4.0			8.3			5.2	
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%	200%	0%	0%	33%	7%	15%	5%	11%	0%	1%	0%
Adj. Flow (vph)	37	1	27	55	3	28	151	441	9	16	531	95
Shared Lane Traffic (%)												
Lane Group Flow (vph)	37	28	0	0	86	0	151	441	9	16	531	95
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5		22.5	22.5		37.5	37.5	37.5	37.5	37.5	37.5
Total Split (%)	37.5%	37.5%		37.5%	37.5%		62.5%	62.5%	62.5%	62.5%	62.5%	62.5%
Maximum Green (s)	18.0	18.0		18.0	18.0		33.0	33.0	33.0	33.0	33.0	33.0
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
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)	4.5	4.5			4.5		4.5	4.5	4.5	4.5	4.5	4.5
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	3.0
Recall Mode	None	None		None	None		Min	Min	Min	Min	Min	Min
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)	7.4	7.4			7.4		25.2	25.2	25.2	25.2	25.2	25.2
Actuated g/C Ratio	0.21	0.21			0.21		0.73	0.73	0.73	0.73	0.73	0.73
v/c Ratio	0.11	0.08			0.28		0.30	0.35	0.01	0.02	0.40	0.08
Control Delay	13.7	7.5			12.6		6.8	5.3	0.9	4.3	5.7	1.5
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0	0.0	0.0	0.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	13.7	7.5			12.6		6.8	5.3	0.9	4.3	5.7	1.5
LOS	B	A			B		A	A	A	A	A	A
Approach Delay		11.0			12.6			5.6			5.1	
Approach LOS		B			B			A			A	
Queue Length 50th (m)	1.8	0.1			2.9		4.1	12.5	0.0	0.4	16.0	0.0
Queue Length 95th (m)	7.9	4.5			12.6		14.8	31.9	0.6	2.1	39.8	3.7
Internal Link Dist (m)		163.0			31.0			160.6			92.3	
Turn Bay Length (m)	50.0						140.0			60.0		25.0
Base Capacity (vph)	882	803			736		638	1579	1272	841	1642	1418
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	0.04	0.03			0.12		0.24	0.28	0.01	0.02	0.32	0.07

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 34.5			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.40			
Intersection Signal Delay: 6.1		Intersection LOS: A	
Intersection Capacity Utilization 61.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Fallowfield Road & O;Keefe Court/Cobble Hill Drive



Intersection	
Int Delay, s/veh	3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	23	0	80	169	0	41
Future Vol, veh/h	23	0	80	169	0	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	23	0	80	169	0	41

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	23	0	352	23
Stage 1	-	-	-	-	23	-
Stage 2	-	-	-	-	329	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1605	-	650	1060
Stage 1	-	-	-	-	1005	-
Stage 2	-	-	-	-	734	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1605	-	614	1060
Mov Cap-2 Maneuver	-	-	-	-	614	-
Stage 1	-	-	-	-	1005	-
Stage 2	-	-	-	-	694	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.4	8.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1060	-	-	1605	-
HCM Lane V/C Ratio	0.039	-	-	0.05	-
HCM Control Delay (s)	8.5	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.2	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	36	0	602	591	25
Future Vol, veh/h	0	36	0	602	591	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	36	0	602	591	25

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	308	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	694	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	694	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.5	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	694	-	-
HCM Lane V/C Ratio	-	0.052	-	-
HCM Control Delay (s)	-	10.5	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.2	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	0	40	21	2	59
Future Vol, veh/h	4	0	40	21	2	59
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	4	0	40	21	2	59

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	114	51	0	0	61	0
Stage 1	51	-	-	-	-	-
Stage 2	63	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	887	1023	-	-	1555	-
Stage 1	977	-	-	-	-	-
Stage 2	965	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	886	1023	-	-	1555	-
Mov Cap-2 Maneuver	886	-	-	-	-	-
Stage 1	977	-	-	-	-	-
Stage 2	964	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	0.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	886	1555	-
HCM Lane V/C Ratio	-	-	0.005	0.001	-
HCM Control Delay (s)	-	-	9.1	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	10.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	119	3	107	22	3	29	78	572	38	37	587	28
Future Vol, veh/h	119	3	107	22	3	29	78	572	38	37	587	28
Conflicting Peds, #/hr	3	0	1	1	0	3	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	500	-	-	-	-	-	1400	-	-	600	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	10	0	18	18	33	0	9	3	0	0	5	8
Mvmt Flow	119	3	107	22	3	29	78	572	38	37	587	28

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1108	1427	588	1478	1436	308	615	0	0	610	0	0
Stage 1	661	661	-	747	747	-	-	-	-	-	-	-
Stage 2	447	766	-	731	689	-	-	-	-	-	-	-
Critical Hdwy	7.45	6.5	6.47	7.57	6.995	6.9	4.235	-	-	4.1	-	-
Critical Hdwy Stg 1	6.25	5.5	-	6.77	5.995	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.65	5.5	-	6.37	5.995	-	-	-	-	-	-	-
Follow-up Hdwy	3.595	4	3.471	3.671	4.3135	3.3	2.2855	-	-	2.2	-	-
Pot Cap-1 Maneuver	167	136	472	85	107	694	923	-	-	979	-	-
Stage 1	434	463	-	344	364	-	-	-	-	-	-	-
Stage 2	544	415	-	382	389	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	142	120	472	59	94	692	923	-	-	979	-	-
Mov Cap-2 Maneuver	142	120	-	59	94	-	-	-	-	-	-	-
Stage 1	397	445	-	315	333	-	-	-	-	-	-	-
Stage 2	472	380	-	282	374	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	58.8	56.8	1	0.5
HCM LOS	F	F		

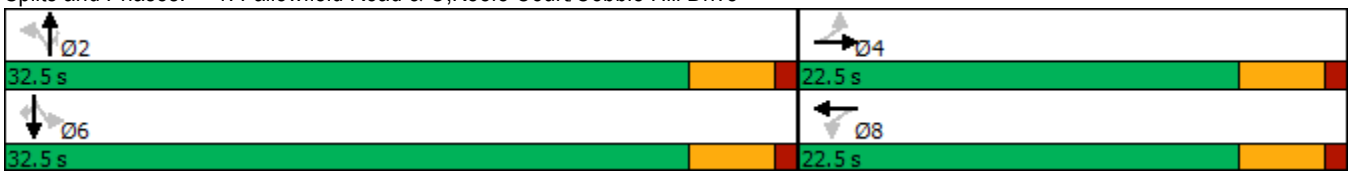
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	923	-	-	142	437	121	979	-	-
HCM Lane V/C Ratio	0.085	-	-	0.838	0.252	0.446	0.038	-	-
HCM Control Delay (s)	9.3	-	-	98.3	16	56.8	8.8	-	-
HCM Lane LOS	A	-	-	F	C	F	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-	5.4	1	2	0.1	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	119	3	107	22	3	29	78	572	38	37	587	28
Future Volume (vph)	119	3	107	22	3	29	78	572	38	37	587	28
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0		0.0	0.0		0.0	140.0		0.0	60.0		25.0
Storage Lanes	1		0	0		0	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. 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
Ped Bike Factor	1.00	0.98			0.99							
Frt		0.854			0.927				0.850			0.850
Flt Protected	0.950				0.980		0.950			0.950		
Satd. Flow (prot)	1572	1295	0	0	1495	0	1586	1767	1547	1729	1733	1432
Flt Permitted	0.722				0.843		0.370			0.381		
Satd. Flow (perm)	1190	1295	0	0	1285	0	618	1767	1547	693	1733	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		107			29				38			30
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		187.0			55.0			184.6			116.3	
Travel Time (s)		13.5			4.0			8.3			5.2	
Confl. Peds. (#/hr)	3		1	1		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 (%)	10%	0%	18%	18%	33%	0%	9%	3%	0%	0%	5%	8%
Adj. Flow (vph)	119	3	107	22	3	29	78	572	38	37	587	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	119	110	0	0	54	0	78	572	38	37	587	28
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5		22.5	22.5		32.5	32.5	32.5	32.5	32.5	32.5
Total Split (%)	40.9%	40.9%		40.9%	40.9%		59.1%	59.1%	59.1%	59.1%	59.1%	59.1%
Maximum Green (s)	18.0	18.0		18.0	18.0		28.0	28.0	28.0	28.0	28.0	28.0
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
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)	4.5	4.5			4.5		4.5	4.5	4.5	4.5	4.5	4.5
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	3.0
Recall Mode	None	None		None	None		Min	Min	Min	Min	Min	Min
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)	9.5	9.5			9.5		23.6	23.6	23.6	23.6	23.6	23.6
Actuated g/C Ratio	0.25	0.25			0.25		0.61	0.61	0.61	0.61	0.61	0.61
v/c Ratio	0.40	0.27			0.16		0.21	0.53	0.04	0.09	0.55	0.03

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	17.9	6.0			9.4		7.7	9.1	2.5	6.2	9.5	2.6
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.9	6.0			9.4		7.7	9.1	2.5	6.2	9.5	2.6
LOS	B	A			A		A	A	A	A	A	A
Approach Delay		12.2			9.4			8.6			9.0	
Approach LOS		B			A			A			A	
Queue Length 50th (m)	5.7	0.2			1.1		2.3	21.7	0.0	1.0	22.7	0.0
Queue Length 95th (m)	19.8	8.8			8.0		9.6	56.8	2.9	4.9	60.3	2.4
Internal Link Dist (m)		163.0			31.0			160.6			92.3	
Turn Bay Length (m)	50.0						140.0			60.0		25.0
Base Capacity (vph)	586	692			647		468	1340	1182	525	1314	1093
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	0.20	0.16			0.08		0.17	0.43	0.03	0.07	0.45	0.03

Intersection Summary			
Area Type:	Other		
Cycle Length: 55			
Actuated Cycle Length: 38.4			
Natural Cycle: 55			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 9.3		Intersection LOS: A	
Intersection Capacity Utilization 62.1%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Fallowfield Road & O;Keefe Court/Cobble Hill Drive



Intersection	
Int Delay, s/veh	3.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	171	0	71	23	0	48
Future Vol, veh/h	171	0	71	23	0	48
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	171	0	71	23	0	48

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	171	0	336	171
Stage 1	-	-	-	-	171	-
Stage 2	-	-	-	-	165	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1418	-	663	878
Stage 1	-	-	-	-	864	-
Stage 2	-	-	-	-	869	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1418	-	629	878
Mov Cap-2 Maneuver	-	-	-	-	629	-
Stage 1	-	-	-	-	864	-
Stage 2	-	-	-	-	825	-

Approach	EB	WB	NB
HCM Control Delay, s	0	5.8	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	878	-	-	1418	-
HCM Lane V/C Ratio	0.055	-	-	0.05	-
HCM Control Delay (s)	9.3	-	-	7.7	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.2	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	65	0	689	690	30
Future Vol, veh/h	0	65	0	689	690	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	65	0	689	690	30

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	360	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	642	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	642	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.2	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	642	-	-
HCM Lane V/C Ratio	-	0.101	-	-
HCM Control Delay (s)	-	11.2	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.3	-	-

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	0	41	28	12	68
Future Vol, veh/h	5	0	41	28	12	68
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	5	0	41	28	12	68

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	147	55	0	0	69	0
Stage 1	55	-	-	-	-	-
Stage 2	92	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	850	1018	-	-	1545	-
Stage 1	973	-	-	-	-	-
Stage 2	937	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	843	1018	-	-	1545	-
Mov Cap-2 Maneuver	843	-	-	-	-	-
Stage 1	973	-	-	-	-	-
Stage 2	930	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.3	0	1.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	843	1545	-
HCM Lane V/C Ratio	-	-	0.006	0.008	-
HCM Control Delay (s)	-	-	9.3	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Future (2028) Total Traffic

Intersection	
Int Delay, s/veh	13.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	37	1	27	55	3	28	151	504	9	16	726	95
Future Vol, veh/h	37	1	27	55	3	28	151	504	9	16	726	95
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	500	-	-	-	-	-	1400	-	-	600	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	200	0	0	33	7	15	5	11	0	1	0
Mvmt Flow	37	1	27	55	3	28	151	504	9	16	726	95

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1314	1573	726	1631	1664	257	821	0	0	513	0	0
Stage 1	758	758	-	811	811	-	-	-	-	-	-	-
Stage 2	556	815	-	820	853	-	-	-	-	-	-	-
Critical Hdwy	7.3	9.5	6.2	7.3	6.995	7.005	4.325	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	8.5	-	6.5	5.995	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	8.5	-	6.1	5.995	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	5.9	3.3	3.5	4.3135	3.3665	2.3425	-	-	2.2	-	-
Pot Cap-1 Maneuver	127	27	428	75	76	730	740	-	-	1063	-	-
Stage 1	402	178	-	344	338	-	-	-	-	-	-	-
Stage 2	488	161	-	372	322	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	98	21	428	57	60	730	740	-	-	1063	-	-
Mov Cap-2 Maneuver	98	21	-	57	60	-	-	-	-	-	-	-
Stage 1	320	175	-	274	269	-	-	-	-	-	-	-
Stage 2	369	128	-	341	317	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	44.6	204.2	2.5	0.2
HCM LOS	E	F		

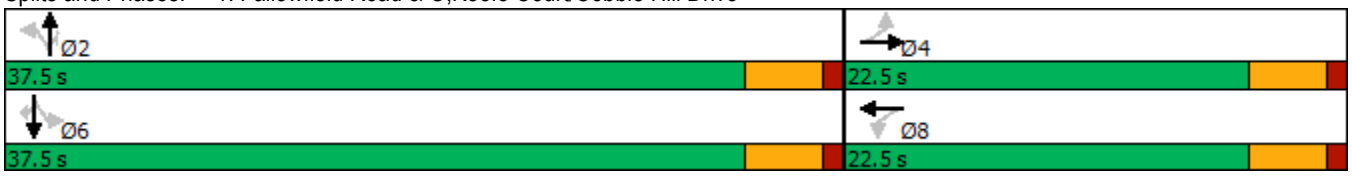
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	740	-	-	98	253	82	1063	-	-
HCM Lane V/C Ratio	0.204	-	-	0.378	0.111	1.049	0.015	-	-
HCM Control Delay (s)	11.1	-	-	62.5	21	204.2	8.4	-	-
HCM Lane LOS	B	-	-	F	C	F	A	-	-
HCM 95th %tile Q(veh)	0.8	-	-	1.5	0.4	5.9	0	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	1	27	55	3	28	151	504	9	16	726	95
Future Volume (vph)	37	1	27	55	3	28	151	504	9	16	726	95
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0		0.0	0.0		0.0	140.0		0.0	60.0		25.0
Storage Lanes	1		0	0		0	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. 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
Frt		0.855			0.956				0.850			0.850
Flt Protected	0.950				0.969		0.950			0.950		
Satd. Flow (prot)	1729	1452	0	0	1630	0	1503	1733	1394	1729	1802	1547
Flt Permitted	0.957				0.789		0.332			0.467		
Satd. Flow (perm)	1742	1452	0	0	1327	0	525	1733	1394	850	1802	1547
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		27			28				27			75
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		187.0			55.0			184.6			116.3	
Travel Time (s)		13.5			4.0			8.3			5.2	
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%	200%	0%	0%	33%	7%	15%	5%	11%	0%	1%	0%
Adj. Flow (vph)	37	1	27	55	3	28	151	504	9	16	726	95
Shared Lane Traffic (%)												
Lane Group Flow (vph)	37	28	0	0	86	0	151	504	9	16	726	95
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5		22.5	22.5		37.5	37.5	37.5	37.5	37.5	37.5
Total Split (%)	37.5%	37.5%		37.5%	37.5%		62.5%	62.5%	62.5%	62.5%	62.5%	62.5%
Maximum Green (s)	18.0	18.0		18.0	18.0		33.0	33.0	33.0	33.0	33.0	33.0
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
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)	4.5	4.5			4.5		4.5	4.5	4.5	4.5	4.5	4.5
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	3.0
Recall Mode	None	None		None	None		Min	Min	Min	Min	Min	Min
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)	7.7	7.7			7.7		34.3	34.3	34.3	34.3	34.3	34.3
Actuated g/C Ratio	0.18	0.18			0.18		0.79	0.79	0.79	0.79	0.79	0.79
v/c Ratio	0.12	0.10			0.33		0.37	0.37	0.01	0.02	0.51	0.08
Control Delay	18.5	9.4			17.2		7.8	4.7	0.8	3.6	6.1	1.7
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0	0.0	0.0	0.0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	18.5	9.4			17.2		7.8	4.7	0.8	3.6	6.1	1.7
LOS	B	A			B		A	A	A	A	A	A
Approach Delay		14.6			17.2			5.4			5.5	
Approach LOS		B			B			A			A	
Queue Length 50th (m)	2.9	0.1			4.6		4.8	15.9	0.0	0.4	27.2	0.5
Queue Length 95th (m)	8.8	5.0			14.1		18.5	37.0	0.5	2.0	63.6	4.2
Internal Link Dist (m)		163.0			31.0			160.6			92.3	
Turn Bay Length (m)	50.0						140.0			60.0		25.0
Base Capacity (vph)	757	645			592		409	1352	1093	663	1405	1223
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	0.05	0.04			0.15		0.37	0.37	0.01	0.02	0.52	0.08

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 43.6			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.51			
Intersection Signal Delay: 6.4		Intersection LOS: A	
Intersection Capacity Utilization 72.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Fallowfield Road & O;Keefe Court/Cobble Hill Drive



Intersection	
Int Delay, s/veh	3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	23	0	80	169	0	41
Future Vol, veh/h	23	0	80	169	0	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	23	0	80	169	0	41

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	23	0	352	23
Stage 1	-	-	-	-	23	-
Stage 2	-	-	-	-	329	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1605	-	650	1060
Stage 1	-	-	-	-	1005	-
Stage 2	-	-	-	-	734	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1605	-	614	1060
Mov Cap-2 Maneuver	-	-	-	-	614	-
Stage 1	-	-	-	-	1005	-
Stage 2	-	-	-	-	694	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.4	8.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1060	-	-	1605	-
HCM Lane V/C Ratio	0.039	-	-	0.05	-
HCM Control Delay (s)	8.5	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.2	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	36	0	667	792	25
Future Vol, veh/h	0	36	0	667	792	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	36	0	667	792	25

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	409	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	597	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	597	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	597	-	-
HCM Lane V/C Ratio	-	0.06	-	-
HCM Control Delay (s)	-	11.4	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.2	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	0	40	21	2	59
Future Vol, veh/h	4	0	40	21	2	59
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	4	0	40	21	2	59

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	114	51	0	0	61	0
Stage 1	51	-	-	-	-	-
Stage 2	63	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	887	1023	-	-	1555	-
Stage 1	977	-	-	-	-	-
Stage 2	965	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	886	1023	-	-	1555	-
Mov Cap-2 Maneuver	886	-	-	-	-	-
Stage 1	977	-	-	-	-	-
Stage 2	964	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	0.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	886	1555	-
HCM Lane V/C Ratio	-	-	0.005	0.001	-
HCM Control Delay (s)	-	-	9.1	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	17.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	119	3	107	22	3	29	78	737	38	37	658	28
Future Vol, veh/h	119	3	107	22	3	29	78	737	38	37	658	28
Conflicting Peds, #/hr	3	0	1	1	0	3	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	500	-	-	-	-	-	1400	-	-	600	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	10	0	18	18	33	0	9	3	0	0	5	8
Mvmt Flow	119	3	107	22	3	29	78	737	38	37	658	28

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1261	1663	659	1714	1672	391	686	0	0	775	0	0
Stage 1	732	732	-	912	912	-	-	-	-	-	-	-
Stage 2	529	931	-	802	760	-	-	-	-	-	-	-
Critical Hdwy	7.45	6.5	6.47	7.57	6.995	6.9	4.235	-	-	4.1	-	-
Critical Hdwy Stg 1	6.25	5.5	-	6.77	5.995	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.65	5.5	-	6.37	5.995	-	-	-	-	-	-	-
Follow-up Hdwy	3.595	4	3.471	3.671	4.3135	3.3	2.2855	-	-	2.2	-	-
Pot Cap-1 Maneuver	130	98	429	56	75	614	867	-	-	850	-	-
Stage 1	396	430	-	271	300	-	-	-	-	-	-	-
Stage 2	485	348	-	347	359	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 107	85	429	37	65	612	867	-	-	850	-	-
Mov Cap-2 Maneuver	~ 107	85	-	37	65	-	-	-	-	-	-	-
Stage 1	360	411	-	247	273	-	-	-	-	-	-	-
Stage 2	415	317	-	247	343	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	110.5	120.4	0.9	0.5
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	867	-	-	107	386	78	850	-	-
HCM Lane V/C Ratio	0.09	-	-	1.112	0.285	0.692	0.044	-	-
HCM Control Delay (s)	9.6	-	-	196.1	18	120.4	9.4	-	-
HCM Lane LOS	A	-	-	F	C	F	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-	7.5	1.2	3.2	0.1	-	-

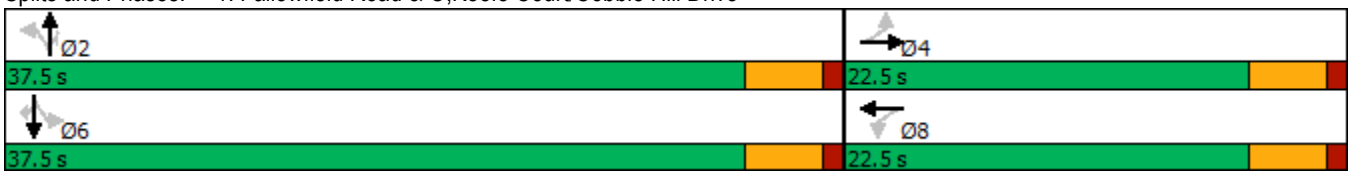
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	119	3	107	22	3	29	78	737	38	37	658	28
Future Volume (vph)	119	3	107	22	3	29	78	737	38	37	658	28
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0		0.0	0.0		0.0	140.0		0.0	60.0		25.0
Storage Lanes	1		0	0		0	1		1	1		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. 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
Ped Bike Factor	1.00	0.98			0.99							
Frt		0.854			0.927				0.850			0.850
Flt Protected	0.950				0.980		0.950			0.950		
Satd. Flow (prot)	1572	1295	0	0	1494	0	1586	1767	1547	1729	1733	1432
Flt Permitted	0.722				0.845		0.331			0.279		
Satd. Flow (perm)	1189	1295	0	0	1288	0	553	1767	1547	508	1733	1432
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		107			29				38			27
Link Speed (k/h)		50			50			80			80	
Link Distance (m)		187.0			55.0			184.6			116.3	
Travel Time (s)		13.5			4.0			8.3			5.2	
Confl. Peds. (#/hr)	3		1	1		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 (%)	10%	0%	18%	18%	33%	0%	9%	3%	0%	0%	5%	8%
Adj. Flow (vph)	119	3	107	22	3	29	78	737	38	37	658	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	119	110	0	0	54	0	78	737	38	37	658	28
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	4	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	22.5	22.5		22.5	22.5		37.5	37.5	37.5	37.5	37.5	37.5
Total Split (%)	37.5%	37.5%		37.5%	37.5%		62.5%	62.5%	62.5%	62.5%	62.5%	62.5%
Maximum Green (s)	18.0	18.0		18.0	18.0		33.0	33.0	33.0	33.0	33.0	33.0
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0
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)	4.5	4.5			4.5		4.5	4.5	4.5	4.5	4.5	4.5
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	3.0
Recall Mode	None	None		None	None		Min	Min	Min	Min	Min	Min
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)	10.2	10.2			10.1		28.9	28.9	28.9	28.9	28.9	28.9
Actuated g/C Ratio	0.23	0.23			0.23		0.66	0.66	0.66	0.66	0.66	0.66
v/c Ratio	0.43	0.29			0.17		0.22	0.64	0.04	0.11	0.58	0.03

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	21.7	6.8			11.2		7.6	10.7	2.3	6.4	9.6	2.6
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.7	6.8			11.2		7.6	10.7	2.3	6.4	9.6	2.6
LOS	C	A			B		A	B	A	A	A	A
Approach Delay		14.5			11.2			10.0			9.1	
Approach LOS		B			B			B			A	
Queue Length 50th (m)	7.4	0.2			1.5		2.5	34.8	0.0	1.1	29.2	0.0
Queue Length 95th (m)	22.2	9.5			8.7		10.1	88.5	2.9	5.3	73.7	2.5
Internal Link Dist (m)		163.0			31.0			160.6			92.3	
Turn Bay Length (m)	50.0						140.0			60.0		25.0
Base Capacity (vph)	517	623			576		422	1349	1190	388	1324	1100
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	0.23	0.18			0.09		0.18	0.55	0.03	0.10	0.50	0.03

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 44.1			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 10.3		Intersection LOS: B	
Intersection Capacity Utilization 70.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Fallowfield Road & O;Keefe Court/Cobble Hill Drive



Intersection	
Int Delay, s/veh	3.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	171	0	71	23	0	48
Future Vol, veh/h	171	0	71	23	0	48
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	171	0	71	23	0	48

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	171	0	336	171
Stage 1	-	-	-	-	171	-
Stage 2	-	-	-	-	165	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1418	-	663	878
Stage 1	-	-	-	-	864	-
Stage 2	-	-	-	-	869	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1418	-	629	878
Mov Cap-2 Maneuver	-	-	-	-	629	-
Stage 1	-	-	-	-	864	-
Stage 2	-	-	-	-	825	-

Approach	EB	WB	NB
HCM Control Delay, s	0	5.8	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	878	-	-	1418	-
HCM Lane V/C Ratio	0.055	-	-	0.05	-
HCM Control Delay (s)	9.3	-	-	7.7	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.2	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	65	0	860	763	30
Future Vol, veh/h	0	65	0	860	763	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	65	0	860	763	30

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	397	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	608	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	608	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.6	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	608	-	-
HCM Lane V/C Ratio	-	0.107	-	-
HCM Control Delay (s)	-	11.6	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.4	-	-

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	0	41	28	12	68
Future Vol, veh/h	5	0	41	28	12	68
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	5	0	41	28	12	68

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	147	55	0	0	69	0
Stage 1	55	-	-	-	-	-
Stage 2	92	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	850	1018	-	-	1545	-
Stage 1	973	-	-	-	-	-
Stage 2	937	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	843	1018	-	-	1545	-
Mov Cap-2 Maneuver	843	-	-	-	-	-
Stage 1	973	-	-	-	-	-
Stage 2	930	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.3	0	1.1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	843	1545	-
HCM Lane V/C Ratio	-	-	0.006	0.008	-
HCM Control Delay (s)	-	-	9.3	7.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Appendix G – Trip Generation Data

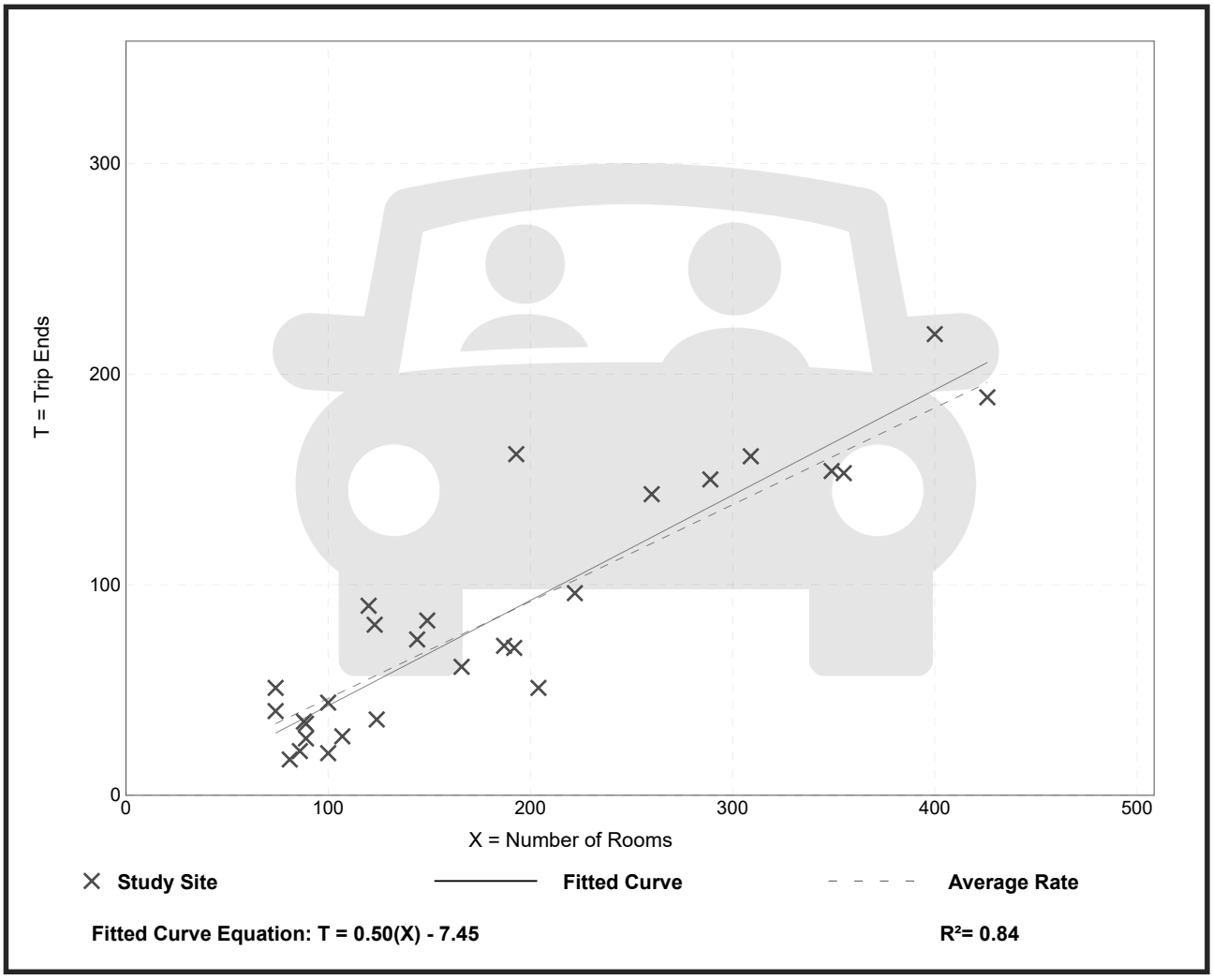
Hotel
(310)

Vehicle Trip Ends vs:	**Rooms**
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:	28
Avg. Num. of Rooms:	182
Directional Distribution:	56% entering, 44% exiting

Vehicle Trip Generation per Room

Average Rate	Range of Rates	Standard Deviation
0.46	0.20 - 0.84	0.14

Data Plot and Equation



Trip Gen Manual, 11th Edition ● Institute of Transportation Engineers

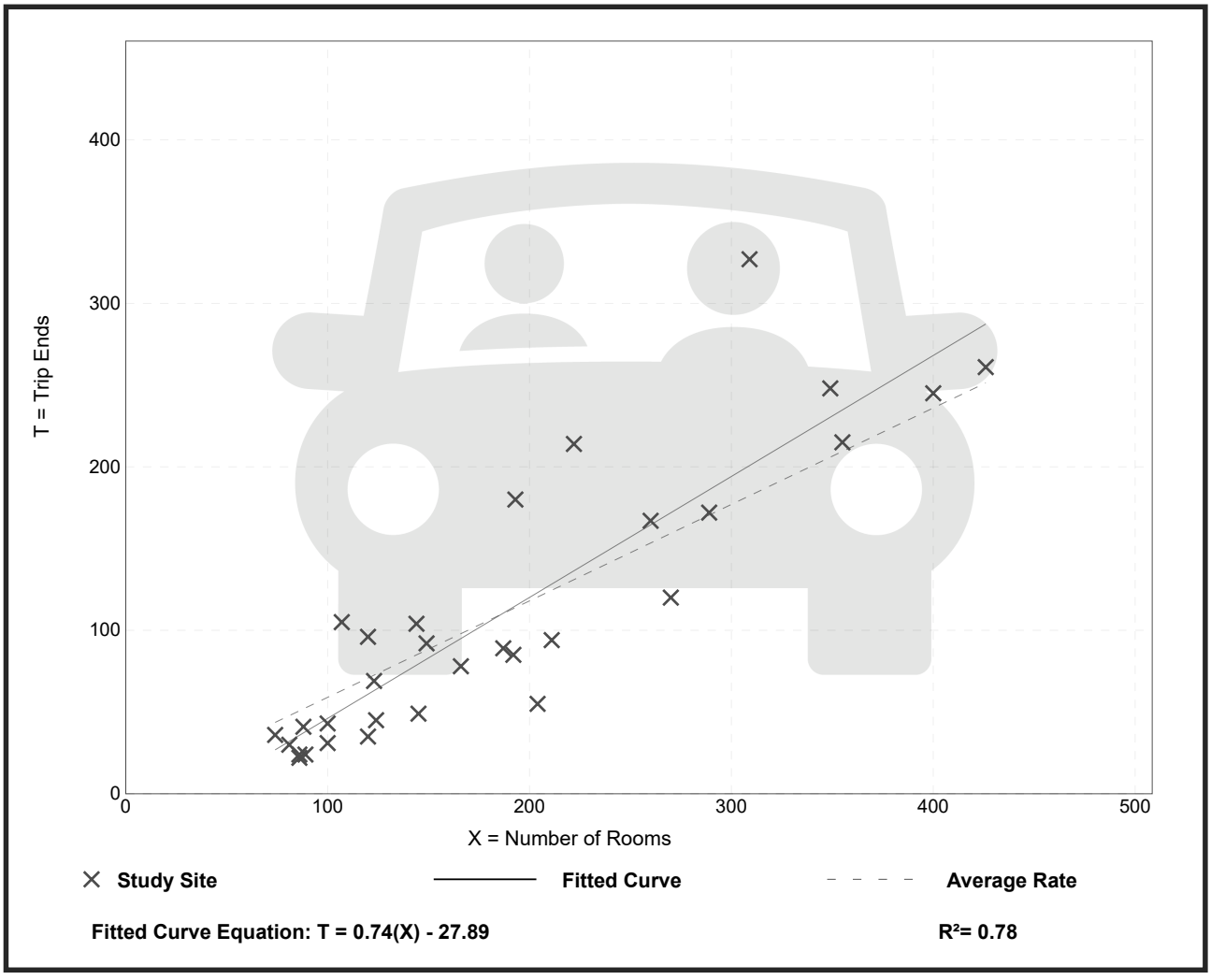
Hotel
(310)

Vehicle Trip Ends vs:	**Rooms**
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:	31
Avg. Num. of Rooms:	186
Directional Distribution:	51% entering, 49% exiting

Vehicle Trip Generation per Room

Average Rate	Range of Rates	Standard Deviation
0.59	0.26 - 1.06	0.22

Data Plot and Equation



Trip Gen Manual, 11th Edition ● Institute of Transportation Engineers

Appendix H – TDM Checklists

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

Legend

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

		TDM-supportive design & infrastructure measures: *Non-residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	1.	**WALKING & CYCLING: ROUTES**	
	1.1	**Building location & access points**	
BASIC	1.1.1	Locate building close to the street, and do not locate parking areas between the street and building entrances	☐
BASIC	1.1.2	Locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations	☐
BASIC	1.1.3	Locate building doors and windows to ensure visibility of pedestrians from the building, for their security and comfort	☑
	1.2	**Facilities for walking & cycling**	
REQUIRED	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 *(see Official Plan policy 4.3.3)*	☐ N/A
REQUIRED	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 *(see Official Plan policy 4.3.12)*	☑

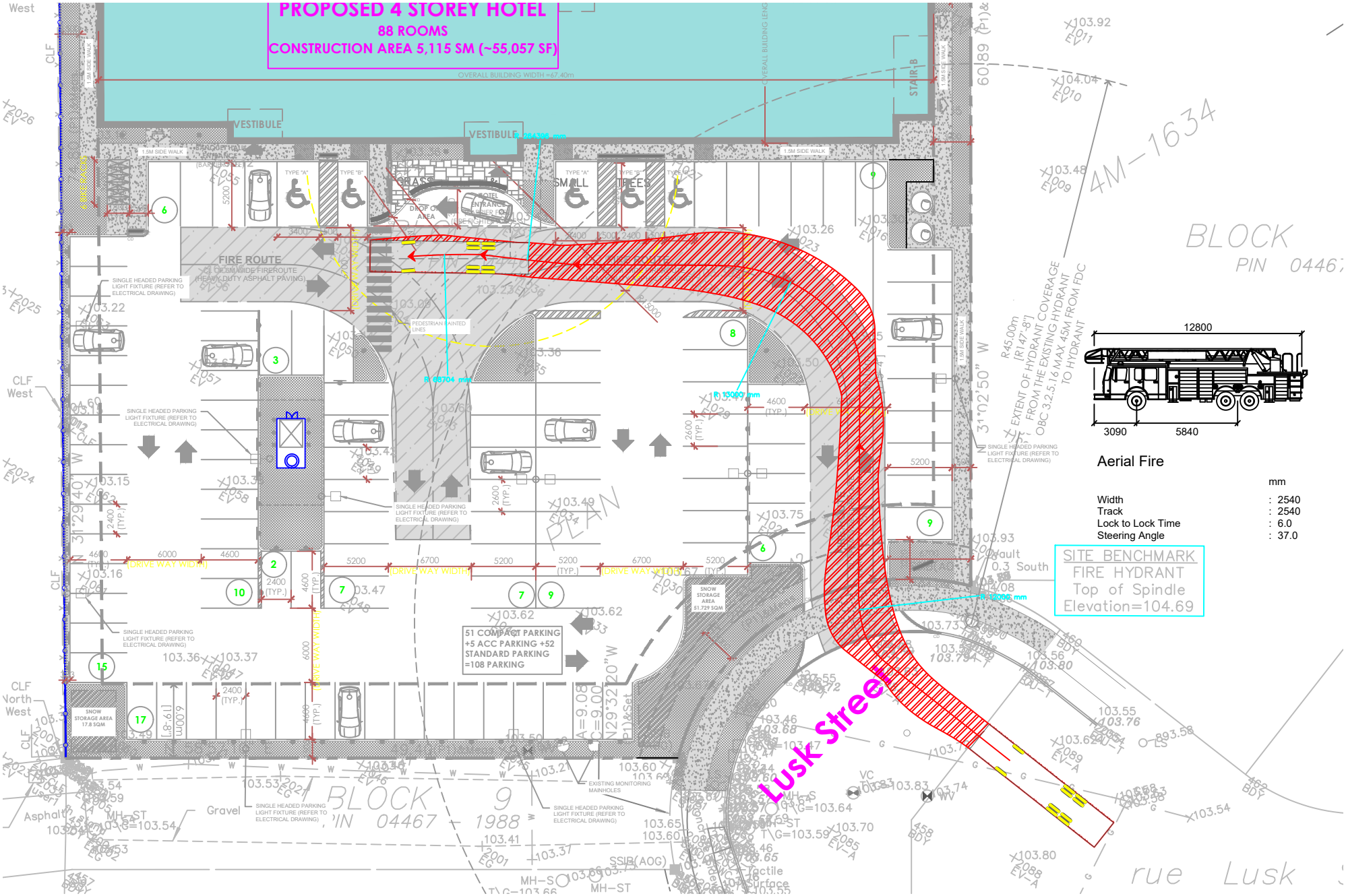
	TDM-supportive design & infrastructure measures: *Non-residential developments*		Check if completed & add descriptions, explanations or plan/drawing references
REQUIRED	1.2.3	Provide sidewalks of smooth, well-drained walking surfaces of contrasting materials or treatments to differentiate pedestrian areas from vehicle areas, and provide marked pedestrian crosswalks at intersection sidewalks *(see Official Plan policy 4.3.10)*	☑
REQUIRED	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 *(see Official Plan policy 4.3.10)*	☑ Sidewalks around building
REQUIRED	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 *(see Official Plan policy 4.3.11)*	☐
BASIC	1.2.6	Provide safe, direct and attractive walking routes from building entrances to nearby transit stops	☑
BASIC	1.2.7	Ensure that walking routes to transit stops are secure, visible, lighted, shaded and wind-protected wherever possible	☑
BASIC	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	☑
	1.3	**Amenities for walking & cycling**	
BASIC	1.3.1	Provide lighting, landscaping and benches along walking and cycling routes between building entrances and streets, sidewalks and trails	☑
BASIC	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)	☑

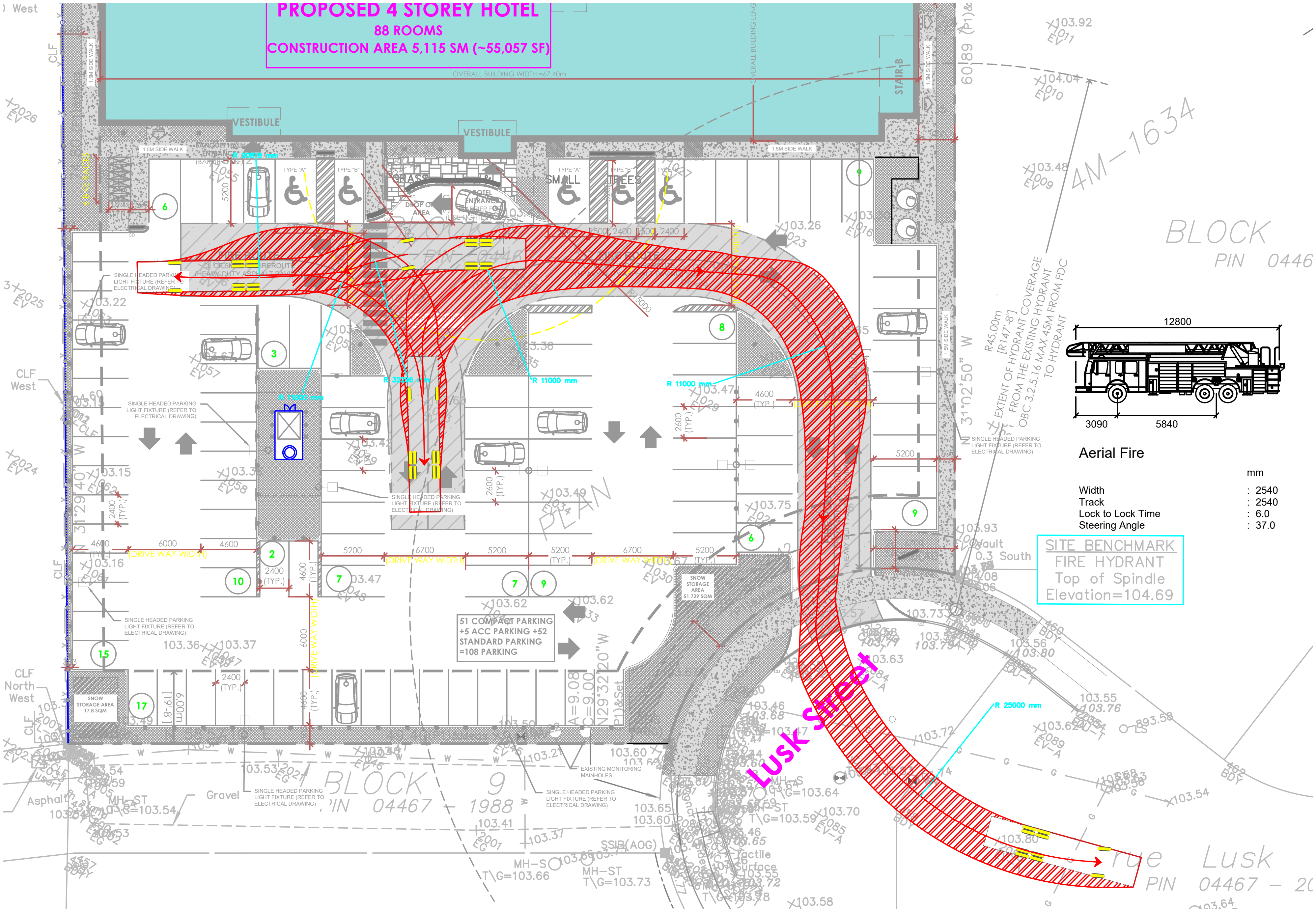
		TDM-supportive design & infrastructure measures: *Non-residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	2.	**WALKING & CYCLING: END-OF-TRIP FACILITIES**	
	2.1	**Bicycle parking**	
REQUIRED	2.1.1	Provide bicycle parking in highly visible and lighted areas, sheltered from the weather wherever possible *(see Official Plan policy 4.3.6)*	☑ curb depression provided to facilitate access to internal drive aisle
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 *(see Zoning By-law Section 111)*	☑
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 *(see Zoning By-law Section 111)*	☑ racks to be secured and anchored
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	☐
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	☐
	2.2	**Secure bicycle parking**	
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 *(see Zoning By-law Section 111)*	☐ N/A
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)	☐
	2.3	**Shower & change facilities**	
BASIC	2.3.1	Provide shower and change facilities for the use of active commuters	☐
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	☐
	2.4	**Bicycle repair station**	
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)	☐

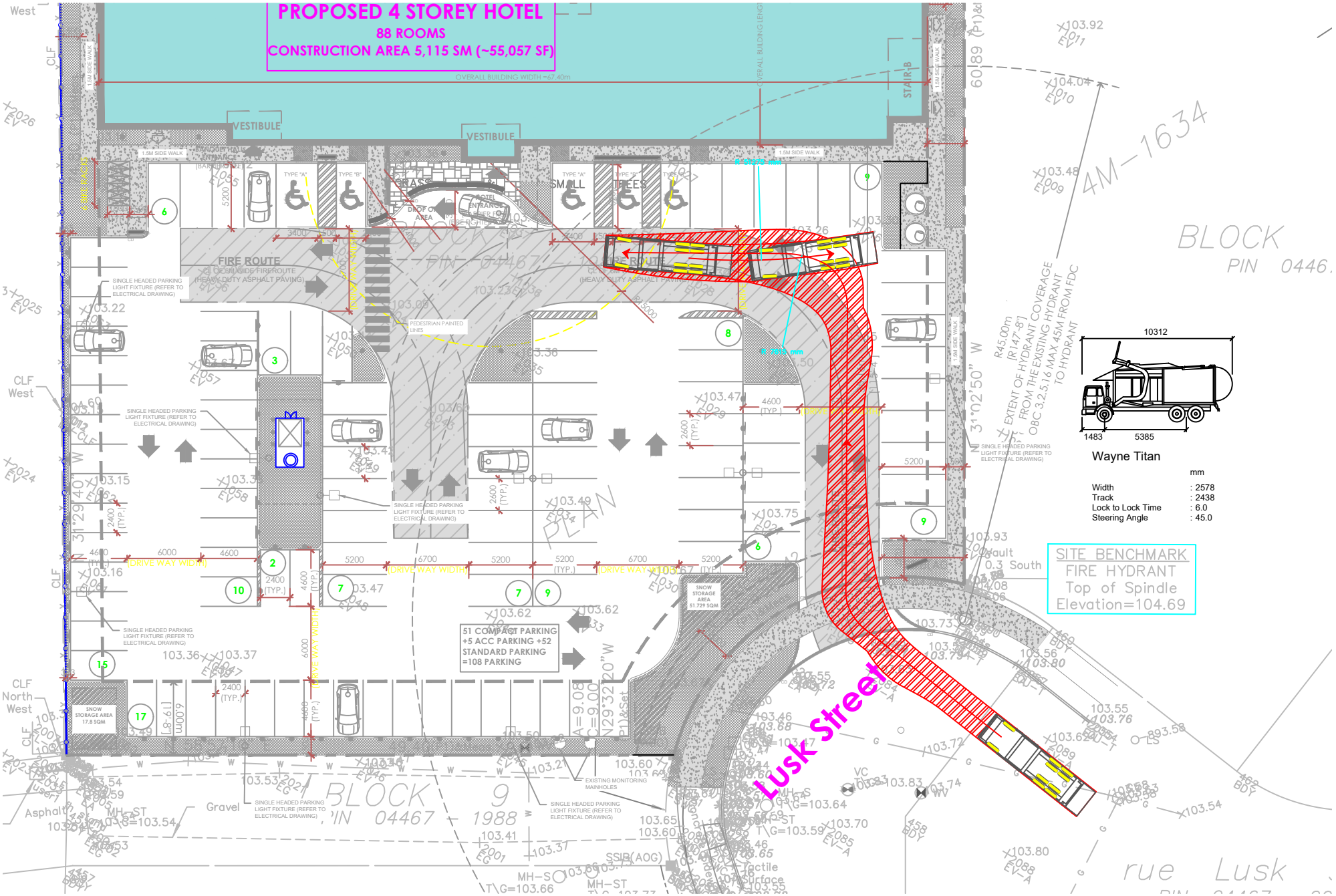
		TDM-supportive design & infrastructure measures: *Non-residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	3.	**TRANSIT**	
	3.1	**Customer amenities**	
BASIC	3.1.1	Provide shelters, lighting and benches at any on-site transit stops	☐ N/A
BASIC	3.1.2	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	☐ N/A
BETTER	3.1.3	Provide a secure and comfortable interior waiting area by integrating any on-site transit stops into the building	☐
	4.	**RIDESHARING**	
	4.1	**Pick-up & drop-off facilities**	
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	☑ Pick-up/drop-off at main entrance
	4.2	**Carpool parking**	
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	☐
BETTER	4.2.2	At large developments, provide spaces for carpools in a separate, access-controlled parking area to simplify enforcement	☐
	5.	**CARSHARING & BIKESHARING**	
	5.1	**Carshare parking spaces**	
BETTER	5.1.1	Provide carshare parking spaces in permitted non-residential zones, occupying either required or provided parking spaces *(see Zoning By-law Section 94)*	☐
	5.2	**Bikeshare station location**	
BETTER	5.2.1	Provide a designated bikeshare station area near a major building entrance, preferably lighted and sheltered with a direct walkway connection	☐

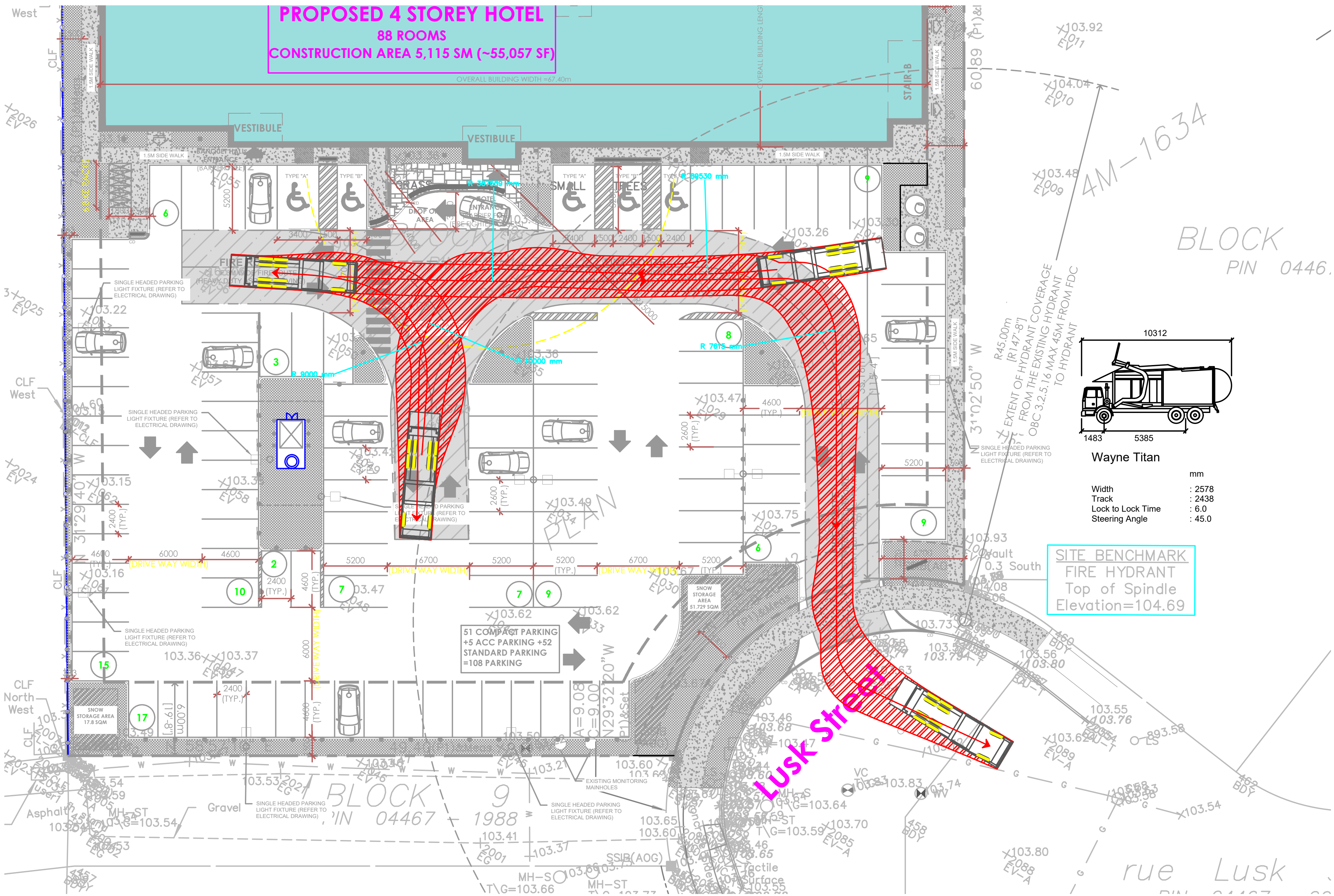
		TDM-supportive design & infrastructure measures: *Non-residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	6.	**PARKING**	
	6.1	**Number of parking spaces**	
REQUIRED	6.1.1	Do not provide more parking than permitted by zoning, nor less than required by zoning, unless a variance is being applied for	☑ Parking meets and does not exceed Zoning By-law requirements
BASIC	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	☐
BASIC	6.1.3	Where a site features more than one use, provide shared parking and reduce the cumulative number of parking spaces accordingly *(see Zoning By-law Section 104)*	☐ single-use
BETTER	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 *(see Zoning By-law Section 111)*	☐
	6.2	**Separate long-term & short-term parking areas**	
BETTER	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)	☐
	7.	**OTHER**	
	7.1	**On-site amenities to minimize off-site trips**	
BETTER	7.1.1	Provide on-site amenities to minimize mid-day or mid-commute errands	☐

Appendix I – AutoTURN Analysis


PROPOSED 4 STOREY HOTEL
88 ROOMS
CONSTRUCTION AREA 5,115 SM (~55,057 SF)
OVERALL BUILDING WIDTH =67.40m
VESTIBULE
FIRE ROUTE
CL COLOUR WIDE FIREROUTE
(HEAVY DUTY ASPHALT PAVING)
SINGLE HEADED PARKING LIGHT FIXTURE (REFER TO ELECTRICAL DRAWING)
PEDESTRIAN PAINTED LINES
DROP OFF AREA
GRASS
SMALL TREES
51 COMPACT PARKING
+5 ACC PARKING +52
STANDARD PARKING
=108 PARKING
SNOW STORAGE AREA 51.729 SQM
SNOW STORAGE AREA 17.8 SQM
EXISTING MONITORING MAINHOLES
Lusk Street
BLOCK 9
PIN 04467 1988
BLOCK
PIN 0446?
4M-1634
12800
3090
5840
Aerial Fire
mm
Width : 2540
Track : 2540
Lock to Lock Time : 6.0
Steering Angle : 37.0
SITE BENCHMARK
FIRE HYDRANT
Top of Spindle
Elevation=104.69


PROPOSED 4 STOREY HOTEL
88 ROOMS
CONSTRUCTION AREA 5,115 SM (~55,057 SF)
VESTIBULE
VESTIBULE
51 COMPACT PARKING
+5 ACC PARKING +52
STANDARD PARKING
=108 PARKING
Lusk Street
BLOCK
PIN 0446
12800
3090
5840
Aerial Fire
mm
Width : 2540
Track : 2540
Lock to Lock Time : 6.0
Steering Angle : 37.0
SITE BENCHMARK
FIRE HYDRANT
Top of Spindle
Elevation=104.69
R 11000 mm
R 25000 mm
[DRIVE WAY WIDTH]
SNOW STORAGE AREA
EXTENT OF HYDRANT COVERAGE FROM THE EXISTING HYDRANT OBC 3.2.5.16 MAX 45M FROM FDC TO HYDRANT
SINGLE HEADED PARKING LIGHT FIXTURE (REFER TO ELECTRICAL DRAWING)
EXISTING MONITORING MAINHOLES
Gravel
Asphalt


PROPOSED 4 STOREY HOTEL
88 ROOMS
CONSTRUCTION AREA 5,115 SM (~55,057 SF)
OVERALL BUILDING WIDTH =67.40m
VESTIBULE
VESTIBULE
1.5M SIDE WALK
FIRE ROUTE
CLOSE SIDE FIREROUTE
(HEAVY DUTY ASPHALT PAVING)
SINGLE HEADED PARKING LIGHT FIXTURE (REFER TO ELECTRICAL DRAWING)
PEDESTRIAN PAINTED LINES
51 COMPACT PARKING
+5 ACC PARKING +52
STANDARD PARKING
=108 PARKING
SNOW STORAGE AREA 17.8 SQM
SNOW STORAGE AREA 51.729 SQM
EXISTING MONITORING MAINHOLES
SSIB(AOG)
Tactile Surface
Asphalt
Gravel
BLOCK 9
PIN 04467 - 1988
BLOCK
PIN 0446.
4M-1634
Lusk Street
rue Lusk
SITE BENCHMARK
FIRE HYDRANT
Top of Spindle
Elevation=104.69
EXTENT OF HYDRANT COVERAGE FROM THE EXISTING HYDRANT OBC 3.2.5.16.MAX 45M FROM FDC TO HYDRANT
R45.00m [R147'-8"]
10312
1483
5385
Wayne Titan
mm
Width : 2578
Track : 2438
Lock to Lock Time : 6.0
Steering Angle : 45.0



PROPOSED 4 STOREY HOTEL
88 ROOMS
CONSTRUCTION AREA 5,115 SM (~55,057 SF)
VESTIBULE
VESTIBULE
STAIR B
51 COMPACT PARKING +5 ACC PARKING +52 STANDARD PARKING =108 PARKING
SNOW STORAGE AREA 17.8 SQM
SNOW STORAGE AREA 51.729 SQM
EXISTING MONITORING MAINHOLES
SINGLE HEADED PARKING LIGHT FIXTURE (REFER TO ELECTRICAL DRAWING)
Lusk Street
BLOCK
PIN 04467
4M-1634
SITE BENCHMARK
FIRE HYDRANT
Top of Spindle
Elevation=104.69
EXTENT OF HYDRANT COVERAGE FROM THE EXISTING HYDRANT OBC 3.2.5.16 MAX 45M FROM FDC TO HYDRANT
10312
1483
5385
Wayne Titan
mm
Width : 2578
Track : 2438
Lock to Lock Time : 6.0
Steering Angle : 45.0

Appendix J – MMLOS Analysis

Multi-Modal Level of Service - Intersections Form

Consultant	Arcadis IBI Group	Project	140895
Scenario	Future Conditions	Date	2022-10-12
Comments			

To add intersections
Select columns LMNO, right-click and *Copy;*
Then select column P, right-click and *Insert Copied Cells*

INTERSECTIONS		Fallowfield & O'Keefe / Cobble Hill				Intersection B				Intersection C			
	Crossing Side	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
Pedestrian	Lanes	7	6	5	3								
	Median	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m								
	Conflicting Left Turns	Permissive	Permissive	Permissive	Permissive								
	Conflicting Right Turns	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								
	Ped Signal Leading Interval?	Yes	Yes	Yes	Yes								
	Right Turn Channel	No Channel	No Channel	No Channel	No Channel								
	Corner Radius	10-15m	10-15m	10-15m	10-15m								
	Crosswalk Type	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings								
	PETSI Score	**6**	**22**	**39**	**72**								
	Ped. Exposure to Traffic LoS	**F**	**F**	**E**	**C**	-	-	-	-	-	-	-	-
	Cycle Length	60	60	60	60								
	Effective Walk Time	22	22	7	7								
	Average Pedestrian Delay	**12**	**12**	**23**	**23**								
	Pedestrian Delay LoS	**B**	**B**	**C**	**C**	-	-	-	-	-	-	-	-
	Level of Service	**F**	**F**	**E**	**C**	-	-	-	-	-	-	-	-
		F				**-**				**-**			
	Approach From	**NORTH**	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**
Bicycle	Bicycle Lane Arrangement on Approach	Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic								
	IF Dedicated Right Turn Lane, THEN Right Turn Configuration, ELSE <blank>	≤ 50 m	> 50 m										
	Dedicated Right Turning Speed	≤ 25 km/h	≤ 25 km/h										
	Cyclist Through Movement	**D**	**F**			-	-	-	-	-	-	-	-
	Separated or Mixed Traffic	**Mixed Traffic**	**Mixed Traffic**	**Mixed Traffic**	**Mixed Traffic**	-	-	-	-	-	-	-	-
	Left Turn Approach	≥ 2 lanes crossed	≥ 2 lanes crossed	One lane crossed	No lane crossed								
	Operating Speed	> 50 to < 60 km/h	> 50 to < 60 km/h	> 50 to < 60 km/h	> 50 to < 60 km/h								
	Left Turning Cyclist	**F**	**F**	**E**	**C**	-	-	-	-	-	-	-	-
	Level of Service	**F**	**F**	**E**	**C**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
		F				**-**				**-**			
Transit	Average Signal Delay	≤ 10 sec	≤ 10 sec	≤ 20 sec	≤ 20 sec								
	Level of Service	**B**	**B**	**C**	**C**	-	-	-	-	-	-	-	-
		C				**-**				**-**			
Truck	Effective Corner Radius	10 - 15 m	< 10 m	< 10 m	10 - 15 m								
	Number of Receiving Lanes on Departure from Intersection	1	1	≥ 2	1								
	Level of Service	**E**	**F**	**D**	**E**	-	-	-	-	-	-	-	-
		F				**-**				**-**			
Auto	Volume to Capacity Ratio												
	Level of Service	**-**				**-**				**-**			

Multi-Modal Level of Service - Segments Form

Consultant	**Arcadis IBI Group**	**Project**	**140895**
Scenario	**Existing and Future Conditions**	**Date**	**2022-10-12**
Comments			

SEGMENTS		Segment	O'Keefe Court	Lusk Street	Fallowfield	Section	Section	Section	Section	Section	Section
			1	2	3	4	5	6	7	8	9
Pedestrian	Sidewalk Width Boulevard Width	-	no sidewalk n/a	≥ 2 m 0.5 - 2 m	1.5 m > 2 m						
	Avg Daily Curb Lane Traffic Volume		≤ 3000	≤ 3000	≤ 3000						
	Operating Speed On-Street Parking		> 50 to 60 km/h no	> 50 to 60 km/h no	> 60 km/h no						
	Exposure to Traffic PLoS		**F**	**A**	**C**	-	-	-	-	-	-
	Effective Sidewalk Width			2.0 m	2.0 m						
	Pedestrian Volume										
	Crowding PLoS		-	-	-	-	-	-	-	-	-
	Level of Service		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Bicycle	Type of Cycling Facility	D	Mixed Traffic	Mixed Traffic	Physically Separated						
	Number of Travel Lanes		≤ 2 (no centreline)	≤ 2 (no centreline)							
	Operating Speed		≥ 50 to 60 km/h	≥ 50 to 60 km/h							
	# of Lanes & Operating Speed LoS		**D**	**D**	**-**	-	-	-	-	-	-
	Bike Lane (+ Parking Lane) Width										
	Bike Lane Width LoS		-	-	-	-	-	-	-	-	-
	Bike Lane Blockages										
	Blockage LoS		-	-	-	-	-	-	-	-	-
	Median Refuge Width (no median = < 1.8 m)		< 1.8 m refuge	< 1.8 m refuge							
	No. of Lanes at Unsignalized Crossing		≤ 3 lanes	≤ 3 lanes							
	Sidestreet Operating Speed		>40 to 50 km/h	>40 to 50 km/h							
	Unsignalized Crossing - Lowest LoS		**B**	**B**	**A**	-	-	-	-	-	-
	Level of Service		**D**	**D**	**A**	**-**	**-**	**-**	**-**	**-**	**-**
Transit	Facility Type	D	Mixed Traffic	Mixed Traffic	Mixed Traffic						
	Friction or Ratio Transit:Posted Speed		Vt/Vp ≥ 0.8	Vt/Vp ≥ 0.8	Vt/Vp ≥ 0.8						
	Level of Service		**D**	**D**	**D**	**-**	**-**	**-**	**-**	**-**	**-**
Truck	Truck Lane Width	B	> 3.7 m	> 3.7 m	> 3.7 m						
	Travel Lanes per Direction		1	1	1						
	Level of Service		**B**	**B**	**B**	**-**	**-**	**-**	**-**	**-**	**-**

Appendix K – Intersection Control Warrants

IBI

OTM BOOK 12* - TRAFFIC SIGNAL WARRANT

Project: 140 Lusk Street **Date:** November 24, 2022

Project #: 140895

Location: Fallowfield Road (Major Roadway) at O'Keefe Court / Cobble Hill Drive (Minor Roadway)

Orientation: North/South East/West

Municipality: Ottawa **Scenario:** Future (2028) 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	480	**720**	1652 100%	826 100%	826 100%	826 100%	1859 100%	929 100%	929 100%	929 100%	100%
B. Vehicle volume along minor roads	120	170	120	**170**	151 89%	76 44%	76 44%	76 44%	283 100%	142 83%	142 83%	142 83%	71%

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	480	**720**	1501 100%	751 100%	751 100%	751 100%	1576 100%	788 100%	788 100%	788 100%	100%
B. Combined vehicle and pedestrian volume crossing artery from minor roads	50	70	50	**70**	171 100%	48 68%	48 68%	48 68%	148 100%	74 100%	74 100%	74 100%	88%

Justification 3 - Volume/Delay Combination

JUSTIFICATION	SATISFIED TO 80% OR MORE?	BOTH SATISFIED TO 80% OR MORE?
Justification 1 - Minimum Vehicular Volume	NO	NO
Justification 2 - Delay to Cross Traffic	YES	

Justification 7 - Projected Volumes

WARRANT	DESCRIPTION	MINIMUM REQUIREMENT				COMPLIANCE		
		FREE FLOW	RESTRICTED FLOW	ADJUSTED FREE FLOW	ADJUSTED RESTRICTED FLOW	SECTIONAL AHV	SECTIONAL %	ENTIRE %
1. MINIMUM VEHICULAR VOLUME	A. Vehicle volumes, all approaches (Average Hour)	480	720	576	**864**	878	100%	53%
	B. Vehicle volume along minor roads (Average Hour)	120	170	144	**204**	109	53%	
2. DELAY TO CROSS TRAFFIC	A. Vehicle volumes, along artery (Average Hour)	480	720	576	**864**	769	89%	68%
	B. Combined vehicle and pedestrian volume crossing artery from minor roads (Average Hour)	50	75	60	**90**	61	68%	

Projected Traffic Volumes:

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

AM Peak Hour Volumes

			↖	28	
95	726	16	←	3	
↙	↓	↘	↙	55	
	37	↗	↖	↑	↗
	1	→	151	504	9
	27	↘			

PM Peak Hour Volumes

			↖	29	
28	658	37	←	3	
↙	↓	↘	↙	22	
	119	↗	↖	↑	↗
	3	→	78	737	38
	107	↘			

Average Hourly Volumes (AHV)

			↖	14	
31	346	13	←	2	
↙	↓	↘	↙	19	
	39	↗	↖	↑	↗
	1	→	57	310	12
	33	↘			

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	151	504	9	16	726	95	37	1	27	55	3	28	0
8:00 AM	76	252	5	8	363	48	19	1	13	28	2	14	0
9:00 AM	76	252	5	8	363	48	19	1	13	28	2	14	0
10:00 AM	76	252	5	8	363	48	19	1	13	28	2	14	0
3:00 PM	78	737	38	37	658	28	119	3	107	22	3	29	4
4:00 PM	39	369	19	19	329	14	59	2	54	11	2	15	2
5:00 PM	39	369	19	19	329	14	59	2	54	11	2	15	2
6:00 PM	39	369	19	19	329	14	59	2	54	11	2	15	2

** Number of pedestrians crossing the major road*
*** These are projected 8-hour traffic volumes.*

Notes:

1. 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.

1 Lane per Direction

2. 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.

Restricted Flow

3. The lowest sectional percentage governs the entire warrant.

4. For "T" intersections the warrant values for the minor road should be increased by 50% (Warrant 1B only).

4-legged Intersection

5. 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.

Existing Intersection

6. The crossing volumes are defined as the sum of:
   (a) Left-turns from both minor road approaches.
   (b) The heaviest through volume from the minor road.
   (c) 50% of the heavier left turn movement from major road when both of the following are met:
      (i) the left-turn volume >120 vph
      (ii) the left-turn volume plus the opposing volume >720 vph
   (d) Pedestrians crossing the main road.

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

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

City of Ottawa
Roundabout Initial Feasability Screening Tool

7

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

1	Project Name:	140 Lusk Street - Transportation Impact Assessment
2	Intersection:	Fallowfield Road & O'Keefe Court / Cobble Hill Drive
3	Location and Description of Intersection: 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	The intersection is currently configured as a two-way stop-controlled intersection with free-flow on Fallowfield Road.
4	What traditional modifications are proposed? 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? Describe, and attach a Roundabout Traffic Flow Worksheet	Multi-lane roundabout.
6	Why is a roundabout being considered?	As an alternative to traffic signals.

8

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

9

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 ☐ No ☒
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 ☐ No ☒
3	Is there an existing uncontrolled approach with a grade in excess of 4 percent?	Yes ☐ No ☒
4	Is the intersection located within a coordinated signal system?	Yes ☐ No ☒
5	Is there a closely-spaced traffic signal or railway crossing that could not be controlled with a nearby roundabout?	Yes ☐ No ☒
6	Are significant differences in directional flows or any situations of sudden high demand expected?	Yes ☐ No ☒
7	Are there known visually-impaired pedestrians that cross this intersection?	Yes ☐ No ☒

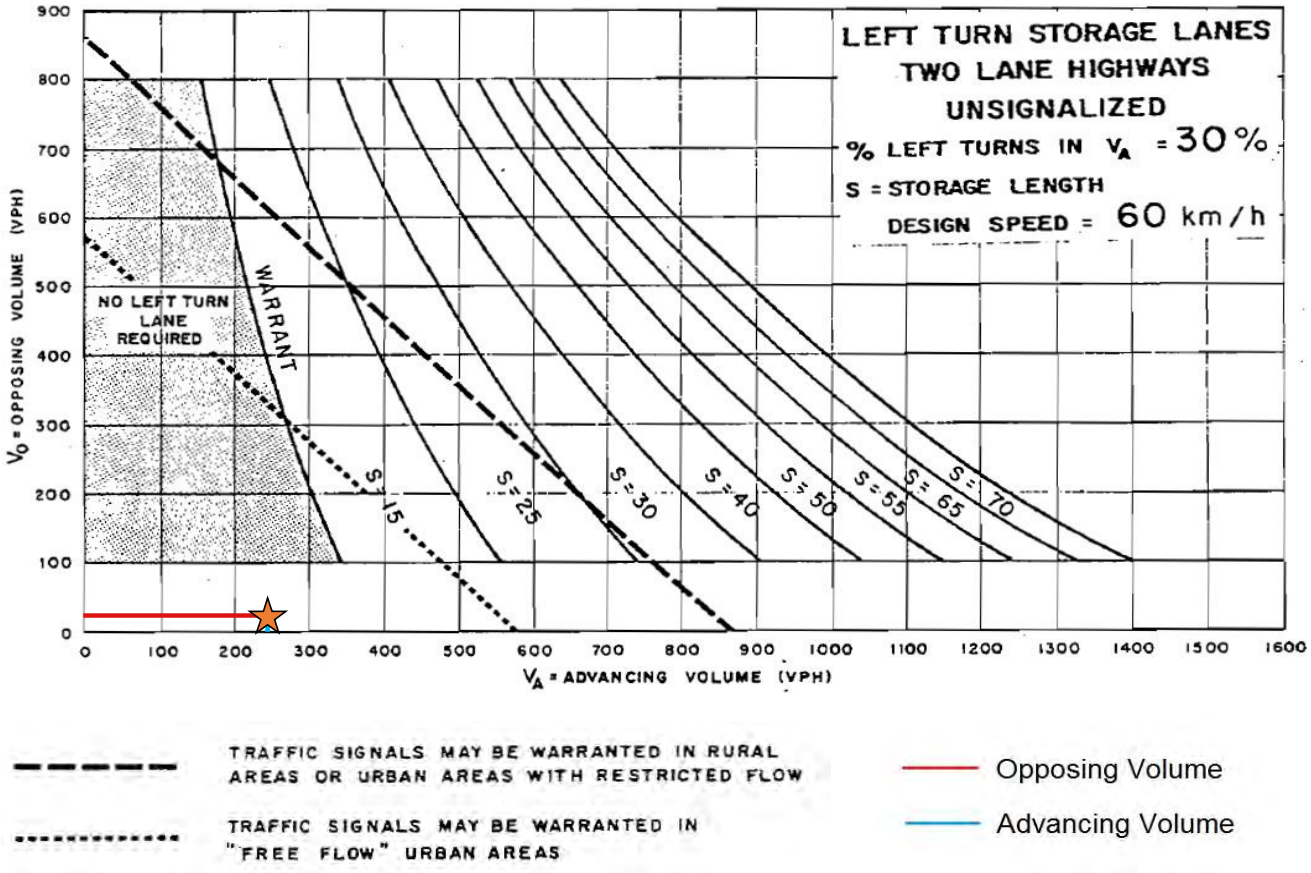
Are there suitability factors for a roundabout?

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 ☐ No ☒
2	Has there been a fatal crash at the intersection in the last 10 years?	Yes ☐ No ☒
3	Are capacity problems currently being experienced, or expected in the future?	Yes ☒ No ☐
4	Are traffic signals warranted, or expected to be warranted in the future?	Yes ☐ No ☒
5	Does the intersection have more than 4 legs, or unusual geometry?	Yes ☐ No ☒
6	Will Planned modifications to the intersection require that nearby structures be widened (i.e. to accommodate left-turn lanes)?	Yes ☐ No ☒
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 ☐ No ☒

Conclusions/recommendation whether to proceed with an Intersection Control Study:	The results of the Roundabout Screening Tool indicate that the a roundabout is not feasible or recommended at the intersection of Fallowfield & O'Keefe/Cobble Hill, given that only one of the suitability factors is met.

Appendix L – Auxiliary Lane Analyses



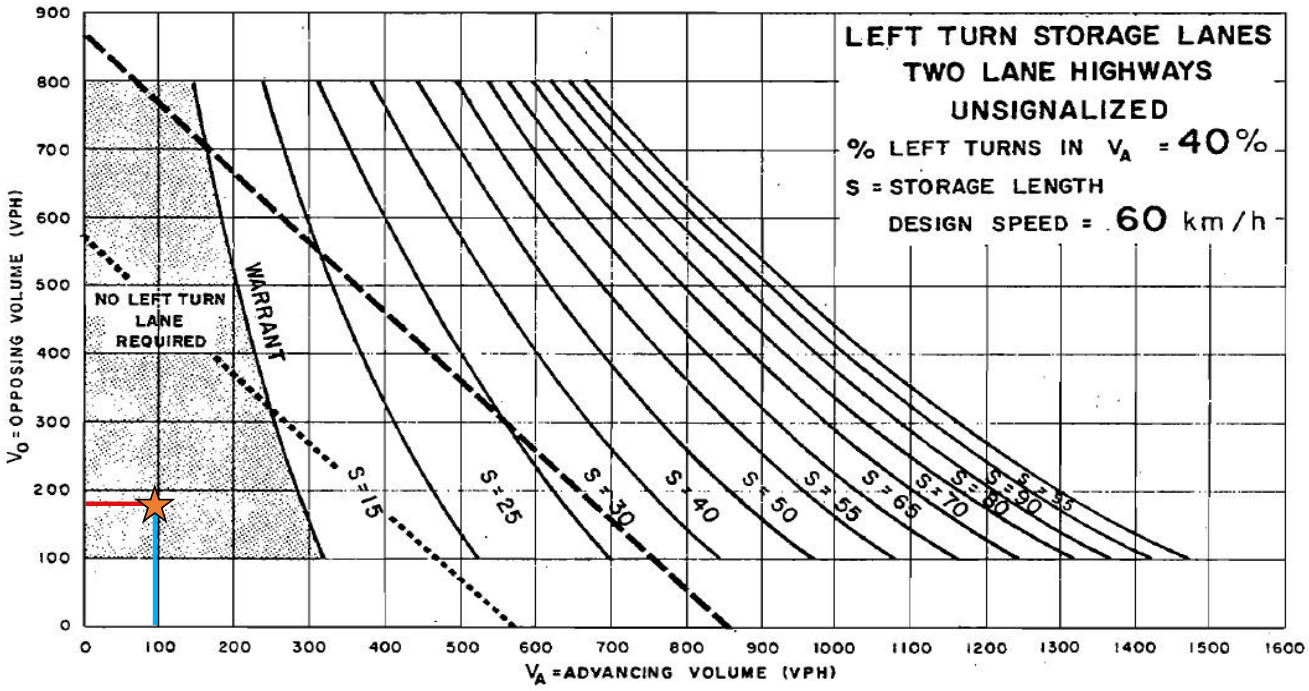
TRAFFIC SIGNALS MAY BE WARRANTED IN RURAL AREAS OR URBAN AREAS WITH RESTRICTED FLOW

TRAFFIC SIGNALS MAY BE WARRANTED IN "FREE FLOW" URBAN AREAS

Opposing Volume

Advancing Volume

O'Keefe Court & Lusk Street | Westbound Left-Turn | AM Peak Hour



TRAFFIC SIGNALS MAY BE WARRANTED IN RURAL AREAS OR URBAN AREAS WITH RESTRICTED FLOW

TRAFFIC SIGNALS MAY BE WARRANTED IN "FREE FLOW" URBAN AREAS

Opposing Volume

Advancing Volume

O'Keefe Court & Lusk Street | Westbound Left-Turn | PM Peak Hour