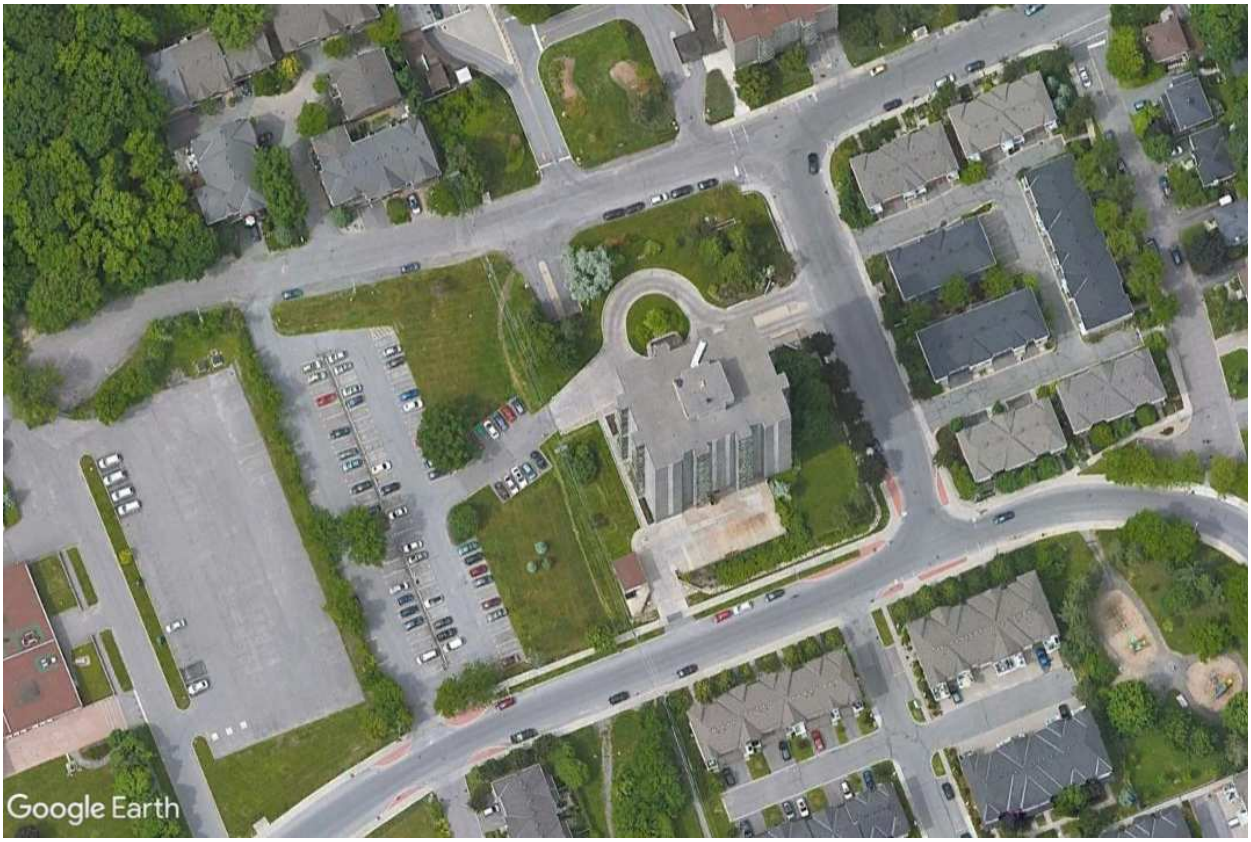
HOMESTEAD LAND HOLDINGS LIMITED

210 CLEARVIEW AVENUE REDEVELOPMENT

ADEQUACY OF SERVICES REPORT

APRIL 06, 2023



210 CLEARVIEW AVENUE REDEVELOPMENT

ADEQUACY OF SERVICES REPORT

HOMESTEAD LAND HOLDINGS LIMITED

ZONING BY-LAW AMENDMENT (REV.01)

PROJECT NO.: 221-08957-00
DATE: APRIL 06, 2023

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April 06, 2023

Homestead Land Holdings Limited
80 Johnson Street
Kingston, ON
K7L 1X7

Attention: Nicholas Higginson, P.Eng., Project Manager, Construction

Subject: 210 Clearview Avenue, Ottawa ON - Adequacy of Services Study

We are pleased to deliver the enclosed Adequacy of Services Study in support of the application for an Official Plan and Zoning By-law Amendment for the subject residential development project. This study presents the existing potable water and sanitary sewer capacity of the services surrounding the site, per coordination with the City, compared to estimations of demand (including fire flow) based on current conceptual design of the site. The report also discusses the stormwater management criteria which will be fully developed during the design stage.

Should there be any questions or comments regarding this report, please do not hesitate to contact the undersigned.

Yours sincerely,

Marina St. Marseille, EIT
Municipal Designer

Daniel Searle, P.Eng.
Municipal Engineer

WSP ref.: 221-08957-00

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SIGNATURES

PREPARED BY

M St. Marseille

April 6, 2023

Marina St. Marseille, EIT
Municipal Designer

Date

APPROVED BY

April 6, 2023

Daniel Searle, P.Eng.
Municipal Engineer

Date

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1 INTRODUCTION

WSP Canada Inc. was retained by Homestead Land Holdings Limited (Homestead) to complete an Adequacy of Services Report for 210 Clearview Avenue Development located in Ottawa, Ontario. The purpose of this report is to summarize the servicing requirements for Zoning By-Law Amendment (ZBLA), including a review of potable water, sanitary sewer, and storm sewer.

1.1 SITE DESCRIPTION

The site measures approximately 0.54 ha (5,437 m^2) which includes parking, greenspace, and pathways. Figure 1 details the site location and site definition. The proposed development is a new 25-storey multi-residential apartment building with two-storey underground parking. The development will accommodate 177 residential units, including amenity space, and private balconies. Refer to Appendix A for the architectural concept site plan.

Figure 1 – Project Site Definition (GeoOttawa)

1.2 EXISTING INFRASTRUCTURE

The existing civil infrastructure near the site is located along Clearview Avenue to the north of the site and Lanark Avenue to the south of the site.

The civil infrastructure available along Clearview Avenue includes the following services:

— 225 mm concrete sanitary sewer

— 375 mm concrete storm sewer

— 200 mm UCI watermain

The civil infrastructure available along Lanark Avenue includes the following services:

— 250 mm PVC sanitary sewer

— 900 mm concrete storm sewer

— 300 mm PVC watermain

The infrastructure is shown in Figure 2 from GeoOttawa mapping.

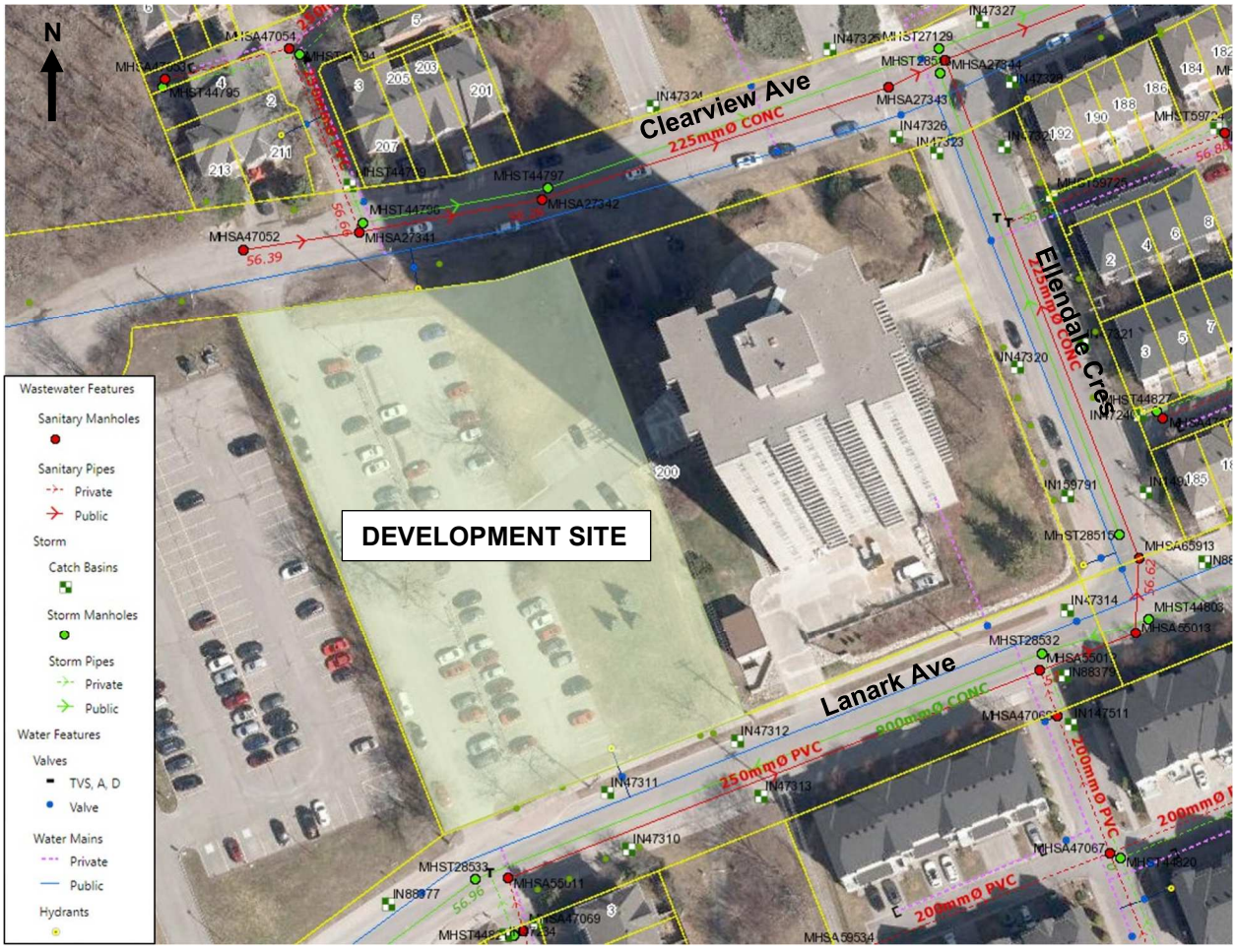

Figure 2 – Existing Site Services (GeoOttawa)

According to GeoOttawa, the nearest fire hydrants to the proposed building are located at the north-east and south-east corners of the existing parking lot within the City Right-Of-Way (ROW). An additional fire hydrant is located at the south-east corner of the site.

The storm sewers on Clearview Avenue and Lanark Avenue discharge to the Ottawa River, approximately 1.5km away, at the north end of Churchill Avenue and Keyworth Avenue to Pontiac Street through an easement, respectively. The sanitary sewer on Lanark Avenue appears to gravity drain from west to east, across Lanark Avenue to Ellendale Crescent to the north. The sanitary sewer on Clearview Avenue connects to the sanitary sewer from Ellendale and continues to the east.

1.3 REFERENCES

The study of servicing adequacy was prepared in accordance with the following documents:

- Ottawa Sewer Design Guidelines, Second Edition, Document SDG002, October 2012, City of Ottawa including:
  - Technical Bulletin ISDTB-2012-4 (June 20, 2012)
  - Technical Bulletin ISDTB-2014-01 (February 5, 2014)
  - Technical Bulletin PIEDTB-2016-01 (September 6, 2018)
  - Technical Bulletin ISDTB-2018-01 (March 21, 2018)
- Ottawa Design Guidelines – Water Distribution, WDG001, July 2010, City of Ottawa including:
  - Technical Bulletin ISDTB-2014-02 (May 27, 2014)
  - Technical Bulletin ISTB-2018-02 (March 21, 2018)
- Water Supply for Public Fire Protection, Fire Underwriters Survey (FUS), 2020
- Pre-Application Consultation Meeting Notes, October 13, 2021 (Refer to Appendix B).

2 POTABLE WATER

2.1 DESIGN CRITERIA

The potable water demand was calculated based on the architectural conceptual design of the site to estimate residential unit numbers and floor area. The domestic demand criteria are from the City of Ottawa Design Guidelines – Water Distribution (2010), applicable criteria summarized in Table 2-1, Table 2-2, and Table 2-3.

Table 2-1 Residential Potable Water Demand Criteria

Demand	Value	Unit
Residential Average Day Demand	280	L/cap/d
Residential Maximum Day Factor	2.5 x average day	L/cap/d
Residential Maximum Hour Factor	2.2 x maximum day	L/cap/d

Table 2-2 Apartment Unit Density Criteria

Apartment Unit Type	Persons/Unit
1 Bedroom	1.4
2 Bedroom	2.1

In addition to the residential demands, a demand of 28,000 L/ha/day will be applied to the communal amenity space.

Table 2-3 Amenity Space Potable Water Demand Criteria

Demand	Value	Unit
Average Day Demand	28,000	L/ha/d
Maximum Day Factor	2.2 x average day	L/ha/d
Maximum Hour Factor	1.8 x maximum day	L/ha/d

The distribution system pressure objectives per the City of Ottawa Design Guidelines are as follows:

- Normal operating pressure ranges between 345 kPa (50 psi) and 552 kPa (80 psi)
- Minimum system pressure under maximum hourly demand conditions is 276 kPa (40 psi)
- Minimum system pressure under maximum day demand plus fire flow conditions is 140 kPa (20 psi)

The estimation of fire demand will be from the Fire Underwriters Survey – Water Supply for Public Fire Protection (2020), summarized in Appendix E.

2.2 DOMESTIC DEMAND ESTIMATION

The domestic potable water demand was calculated based on the demand criteria in Section 2.1 and the architectural conceptual design of the apartment building. The summary of the number of units and capita per unit is summarized in Table 2-4 and amenity space summarized in Table 2-5.

Table 2-4 Residential Population from Conceptual Design

Unit Type	Apartment Building	
One Bedroom	56 units	100 capita
Two Bedroom	121 units	265 capita
Total	**177 units**	**365 capita**

Table 2-5 Amenity Space from Conceptual Design

Building Type	Area
Amenity Space	1,934 m^2
Total	**1,934 m^2**

The estimated domestic potable water demand was calculated and is summarized in Table 2-7. For detailed calculations, refer to Appendix C.

Table 2-6 Domestic Potable Water Demand

	Residential Units	Amenity Space	Total
Average Day Demand	1.08 L/s	0.06 L/s	**1.15 L/s**
Maximum Day Demand	2.71 L/s	0.14 L/s	**2.84 L/s**
Maximum Hour Demand	5.95 L/s	0.25 L/s	**6.20 L/s**

Therefore, the average day demand for the proposed apartment building is 1.15 L/s, with a maximum day demand of 2.84 L/s and maximum hour demand of 6.20 L/s.

2.3 FIRE DEMAND ESTIMATION

The fire demand was estimated based on the FUS design criteria in Section 2.1 and the architectural concept design of the apartment building. The following information was provided by the Owner and used to determine required fire flow:

- Construction type: non-combustible (C=0.80)
- Protected or unprotected openings: protected vertical openings (Area = largest floor area + 25% of each 2 adjoining floors)
- Occupancy and contents: limited combustible (-15%)
- Automatic sprinkler protection (-40%):
  - Automatic sprinkler protection designed and installed in accordance with NFPA 13 (-30%)
  - Fully supervised system (-10%)
- North exposure: 20.1-30 m separation (+10%)

The required fire flow was calculated to measure 83.3 L/s. Refer to Appendix E for detailed FUS calculations.

2.4 PROPOSED SERVICE CONNECTION

Per the City of Ottawa's Water Distribution Guidelines, the site is required to be services with two (2) watermain connections for redundancy as the average day demand is greater than 50 m^3/day (0.58 L/s).

The 200 mm diameter water service along Clearview Avenue is a dead-end main and therefore, given the underground parking garage structure area and site plan layout, a dual feed (each 200mm diameter) from Lanark Avenue will be proposed. Refer to Appendix D for the conceptual servicing layout and connection locations.

2.5 EXISTING CAPACITY

To determine the adequacy of existing services, the following scenarios were modelled to verify available flow and pressure:

- Average Day Flow, maximum system pressure
- Maximum Hourly Flow, minimum system pressure
- Maximum Day Demand + Fire Flow, minimum system pressure during fire

Per correspondence with the City (Appendix B), the following boundary conditions were provided at the City connections:

- Assumed average watermain elevation: 60.70 m
- Minimum hydraulic grade line: 108.6 m
- Maximum hydraulic grade line: 115.1 m
- Hydraulic grade line during Maximum Day + Fire Flow: 109.9 m

To verify available flow and pressure at the building, a water model was prepared using WaterGEMS. For all three scenarios reviewed, the Maximum Day + Fire Flow hydraulic grade line was used as the boundary condition. Table 2-7 summarizes the model outputs.

Table 2-7 Residual Watermain Pressure

	Demand	Pressure at Building
Average Day	1.15 L/s	551 kPa (79.9 psi)
Peak Hour	6.20 L/s	505 kPa (73.24 psi)
Max Day + Fire	86.14 L/s	504 kPa (73.10 psi)

Based on the results, domestic and fire demands can be serviced within the City's pressure boundaries.

3 SANITARY SEWER

3.1 DESIGN CRITERIA

The sanitary sewer flow was calculated based on the architectural conceptual design of the site to estimate residential unit numbers. The daily sewage flow for the project establishments are from the City of Ottawa Sewer Design Guidelines (2012) and City of Ottawa Technical Bulletin ISTB-2018-01 (2018), summarized in Table 3-1, Table 3-2, and Table 3-3.

Table 3-1 Residential Sanitary Sewer Flow Criteria

Demand	Value	Unit
Residential Average Day Demand	280	L/cap/d
Residential Peaking Factor (Harmon Equation)	$PF = 1 + \left(\frac{14}{4 + \sqrt{\frac{Population}{1000}}} \right) * 0.8$ (Min. 2.0; Max. 4.0)	N/A

Table 3-2 Apartment Unit Density Criteria

Apartment Unit Type	Persons/Unit
1 Bedroom	1.4
2 Bedroom	2.1

Table 3-3 Peak Infiltration Allowance

Demand	Value	Unit
Peak Infiltration Allowance	0.33	L/s/ha

3.2 SEWAGE FLOW ESTIMATION

The sanitary sewer demand was calculated based on the demand criteria in Section 3.1 and the architectural conceptual design of the apartment building. The summary of the number of units and capita per unit is summarized in Table 3-4 and amenity space in Table 3-5.

Table 3-4 Residential Population Estimation from Conceptual Design

Unit Type	Apartment Building	
One Bedroom	56 units	79 capita
Two Bedroom	121 units	255 capita
Total	**177 units**	**334 capita**

Table 3-5 Amenity Space from Conceptual Design

Building Type	Area
Amenity Space	1,934 m^2
Total	**1,934 m^2**

Using the population and amenity space provided, the sanitary sewer demand was calculated and is summarized in Table 3-6.

Table 3-6 Design Sewage Flow Calculation

	Apartment Building
Average Sewage Flow	1.15 L/s
Peaking Factor (Calculated)	3.45
Peak Sewage Flow	3.95 L/s
Extraneous Flow	0.18 L/s
Total Peak Design Flow	**4.13 L/s**

Therefore, the average sewage flow for the proposed apartment building is 1.15 L/s, with a peak sewage flow of 3.95 L/s (using a peaking factor of 3.45), and total peak design flow of 4.13 L/s including extraneous flow.

3.3 PROPOSED SERVICE CONNECTION

Per the City's Sewer Design Guidelines, the sewer lateral should be designed with a minimum diameter of 135 mm, minimum slope of 1.0%. The sanitary sewer lateral size will be confirmed with the mechanical designer during detailed design.

A 200 mm diameter sanitary sewer with a minimum slope of 1.0% will be sufficient to convey the sanitary flow to Clearview Avenue with design velocities within 0.6 m/s to 3.0 m/s. The sanitary sewer connection has been proposed at the existing 225mm diameter sanitary sewer within the ROW. Refer to Appendix D for the conceptual servicing layout and connection location.

3.4 EXISTING CAPACITY

It was confirmed by the City (via email dated September 2, 2022), that the receiving sanitary sewer on Clearview Avenue has sufficient capacity for the proposed development (4.13 L/s). The correspondence has been provided in Appendix B.

4 STORM SEWER

4.1 DESIGN CRITERIA

Per the Pre-Consultation Meeting with the City, all post-development storm events will need to be released at the pre-development 2-year storm event flow rate to Clearview Avenue. The pre-development peak flow rate for the 2-year storm event shall be determined per existing conditions with a runoff coefficient (C) no greater than 0.50. The runoff coefficients are per the City of Ottawa Sewer Design Guidelines. The time of concentration will also be calculated for pre- and post-development conditions, with a minimum time of 10 minutes. It is assumed the storm infrastructure has sufficient capacity to receive the 2-year pre-development storm event peak flow rate.

4.1.1 RIDEAU VALLEY CONSERVATION AUTHORITY (RVCA) CONSULTATION

In addition to the stormwater management quantity controls, the stormwater will need to meet Level 1, enhanced protection (80% TSS removal) per the Ministry of Environment, Conservation and Parks (MECP) Stormwater Management Planning and Design Manual. The correspondence from the RVCA has been provided in Appendix B.

4.1.2 MINISTRY OF ENVIRONMENT, CONSERVATION AND PARKS (MECP)

As the site is a non-industrial property, and no external sanitary or storm sewage is anticipated to enter the property, an Environmental Compliance Approval (ECA) is not anticipated to be required by the MECP. This will be verified during the Site Plan Control process.

4.2 PRE- AND POST-DEVELOPMENT FLOWS

The proposed development will slightly increase the imperviousness of site when compared to existing conditions. Refer to Appendix F for stormwater management calculations and preliminary stormwater management catchment mapping.

As the proposed development area (A1) measures a runoff coefficient greater than 0.50, as such the pre-development runoff coefficient was assumed to be 0.50. The calculated post-development runoff coefficient for the development area (A1) is 0.59. The pre- and post-development flow conditions for events with return periods of 2-year, 5-year, and 100-years were calculated for the entire site and compared to ensure that all stormwater is controlled.

The summary of pre- and post-development flows as well as preliminary storage requirements are summarized in Table 4-1.

Table 4-1 Pre- and Post-Development Stormwater Peak Flows

Flow Event	Pre-Development Peak Flow	Post-Development Peak Flow	Allowable Release Rate (2-year)	Approx. Storage Requirements
1:2 year	36.6 L/s	72.6 L/s	36.6 L/s	21.6 m^3
1:5 year	49.6 L/s	98.5 L/s	36.6 L/s	37.2 m^3
1:100 year	106.2 L/s	211.0 L/s	36.6 L/s	129.6 m^3

The stormwater from the areas that are not being developed as part of the project (A2, A3) will drain as per existing conditions to Clearview and Ellendale Avenue. The portion of the site that drains to Lanark Avenue (B1) will continue to overland flow to Lanark Avenue at flows less than pre-development flows no greater than the 5-year storm event. The developed area (A1) will be graded to capture all stormwater runoff and direct the flows to an underground storage cistern within the underground parking garage prior to connecting to Clearview Avenue. The stormwater flow released from the cistern to Clearview Avenue

will be pumped at a fixed release rate equal to the 2-year pre-development condition (36.6 L/s). Details related to pump arrangements and corresponding cistern storage levels will be provided during detailed design.

Quality control to meet the MECP's Enhanced Level (80% TSS Removal) will be addressed with an oil/grit separator using a Stormceptor or approved equivalent.

5 CONCLUSION

The purpose of the report was to summarize the servicing requirements for Zoning By-Law Amendment, including a review of potable water, sanitary sewer, and storm sewer.

It should be noted that all flow, demand and stormwater calculations are estimates based on the conceptual architectural plans and are subject to change during detailed design. The demands and estimates include the following:

- Preliminary maximum hourly water demand of 6.20 L/s and a maximum day demand plus fire flow of 86.14 L/s. Per coordination with the City for the supply watermain boundary conditions on Lanark Avenue, it was confirmed the existing system has sufficient capacity to supply the domestic and fire demand estimates within the system pressure limits.
- Preliminary total design sewage flow was calculated to measure 4.13 L/s. Per coordination with the City, it was confirmed that there were no sanitary sewer capacity constraints in the proposed receiving sewer on Clearview Avenue.
- The site will be required to limit the stormwater flow to the pre-development 2-year storm flow rate for all events including and up to the post-development 100-year storm along with quality control prior to discharging to the municipal storm sewer system on Clearview Avenue. Preliminary estimates of the stormwater runoff flow rates approximate a maximum allowable release rate of 36.6 L/s, with a required storage volume of approximately 129.6 m^3.

The review of servicing requirements of potable water, sanitary sewer, and storm sewer for the proposed development at 210 Clearview Avenue in Ottawa confirms the existing infrastructure is sufficient.

APPENDIX

A

ARCHITECTURAL CONCEPT SITE PLAN

SITE INFO.

SITE AREA	10967.2 sq. m.
EXISTING ZONING	
AREA A	R5C H(28)
AREA B	O1 [313] S216
AREA C	O1 [313]
AREA D	R5C H(78)
GROSS FLOOR AREA (ZONING DEFINITION)	
EXISTING APARTMENT	~19300 SQ.M.
	224 units
	110 indoor parkings

PROJECT INFO.

BUILDING HEIGHT	25 STOREY
GROSS FLOOR AREA (ZONING DEFINITION)	16220 SQ.M.
RESIDENTIAL UNITS	177
ONE BEDROOM	56
TWO BEDROOM	121
CAR PARKING REQUIRED	100 MIN.
MIN. RESIDENTIAL (0.5 after first 12)	83
MIN. VISITOR (0.1 after first 12)	17
MAX. VISITOR	30
MAX. RESIDENTIAL + VISITOR	310
BIKE PARKING REQUIRED	
RESIDENTIAL (0.5)	89
CAR PARKING PROVIDED	213
P1	106
P2	107
BIKE PARKING PROVIDED	177
P1	119
P2	58
AMENITY REQUIRED (6 SQ.M. PER UNITS)	1062 SQ.M.
MIN. COMMUNAL	531 SQ.M.
AMENITY PROVIDED	
COMMUNAL (ROOF DECK AND INDOOR)	1934 SQ.M.
GROUND FLOOR	412 SQ.M.
4TH FLOOR	1030 SQ.M.
25TH FLOOR	492 SQ.M.
PRIVATE BALCONY	1430 SQ.M.
LANDSCAPED AREA	47%

IT IS THE RESPONSIBILITY OF THE APPROPRIATE CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE AND TO REPORT ALL ERRORS AND/OR OMISSIONS TO THE ARCHITECT.

ALL CONTRACTORS MUST COMPLY WITH ALL PERTINENT CODES AND BY-LAWS.

THIS DRAWING MAY NOT BE USED FOR CONSTRUCTION UNTIL SIGNED BY THE ARCHITECT.

DO NOT SCALE DRAWINGS.

No.	DESCRIPTION	DATE
01	ISSUED FOR OPA&REZONING - 2ND ROUND	2023/03/17

REVISIONS:

ARCHITECT SEAL: ONTARIO ASSOCIATION OF ARCHITECTS — RODERICK LAHEY LICENCE 4375

NORTH ARROW: PROJECT NORTH

CLIENT: HOMESTEAD

ARCHITECT: rla/architecture
56 Beech Street, Ottawa, Ontario K1S 3J6
t.613.724.9932 f.613.724.1209 www.rodericklahey.ca

PROJECT TITLE: 210 CLEARVIEW AVE.
OTTAWA ONTARIO

SHEET TITLE: SITE PLAN

DRAWN: RLA	CHECKED: RLA
SCALE: 1:500	SHEET No. A01
PROJECT No. 2117	

PLOT DATE: Monday, March 20, 2023

APPENDIX

B EXTERNAL COMMUNICATIONS

Pre-Application Consultation Meeting Notes

Property Address: 200 Clearview Avenue
Wednesday, October 13, 2021

Attendees:

City of Ottawa:
Jessica Button (File Lead), Christopher Moise (Urban Design), Allison Hamlin (Planning), Sami Rehman (Environmental)

Applicant Team:
Ghada Zaki (FoTenn), Paul Black (FoTenn), Roderick Lahey (RLA Architecture), Roderick Lahey (RLA Architecture), Alf Hendry (Holmstead), Jack Mangan (Homestead),

Community: Heather Mitchel (Westboro Community Association)

Regrets:
City of Ottawa: Neeti Paudel (Transportation), Mark Richardson (Forestry), Mohamed Fawzi (Project Manager), Mike Russett (Parks)

Meeting notes:

Opening & attendee introduction

- Introduction of meeting attendees
- Overview of proposal:
    - Proposal would be subject to an Official Plan Ament, Zoning By-law Amendment, Site Plan Control, Complex Process.

Preliminary comments and questions from staff and agencies, including follow-up actions:

Planning (Jessica Button)

- Application required
    - Official Plan Amendment, Zoning By-law Amendment
    - Site Plan Control – Complex (Manager Approval, Public Consultation)
- The property included in the Richmond Road / Westboro Secondary Plan
    - Lands are identified as Sector 6. Policy Direction aims to maintain the area as low rise residential, supports four support maximum four-storey residential zoning on the adjacent Jules Leger site. Additional policy encourages north-south pedestrian connectivity.
    - See the Richmond Road / Westboro Secondary Plan for additional policy direction.
    - Review and appropriately address the policies in the City's new Official Plan which may be in force and effect at the time of application. Note that the Secondary Plan Polices carry over and continue to require amendment in order to support the application.

- The following City policies or guidelines are applicable to the site:
    - Tree Protection By-law
    - Bird Friendly Design Guidelines
    - Waste Management Guidelines
    - Urban Design Guidelines for High-rise Buildings

- The site includes the following zones:
    - R5C H(28) S216
    - O1 [313] S216
    - O1 [313]
- Please consider the existing setback provisions within Schedule 216
- Underground / Accessory Parking is permitted within the 313 Exception.
- Existing Site Plan Agreement Registered in 1966 for the existing apartment building. Agreement was for two buildings with respective heights of 250' and 130', only one of those appear to have been built. New Site Plan Agreement Required.
- File lead's comments on the proposal:
    - Please confirm proposed tenure in your submission.
    - Design for universal accessibility (e.g. ramps instead of steps where possible)
    - Garbage storage and loading shall be interior to the building, located away from existing residential uses.
    - Consider the inclusion of larger units, at grade amenity area, and increased connectivity between the use, the adjacent greenspace, and the adjacent apartment building.
    - Consider re-locating the pod of parking located between the two buildings to maximize greenspace.
    - If the buildings offer shared assets, pathways are required.
    - Consider the inclusion of amenity area and a north south connection within the greenspace.
    - The tower requires an 11.5m setback.
    - Provide the tower floor plate area.
    - Consider and provide justification for a 3 vs 4 storey floor base.
    - Tree protection and landscaping should be accommodated around the periphery of the site.
    - For proposals including more than a 25% increase from the permitted as-of-right zoning, include calculations for Section 37 Implementation Guidelines. Community benefits could include retained greenspace, and north south pedestrian connection.

Urban Design (Christopher Moise)

- This proposal does not run along one of the City's Design Priority Areas and need not attend the City's UDRP. Staff will be responsible for evaluating the proposal and providing design direction.
- We have the following questions/comments about the design presented:

    - Tower option:
        - What is the best height for the podium? Would a three storey podium height relate better to the surrounding neighbourhood context?
        - Tower expression might suit the surrounding context better if a podium set-back was provided all around the tower?
    - We recommend the ramp be incorporated into the podium to give additional space for landscaping and tree planting on the site.
    - We recommend grade related units to help connect the proposal with the surrounding low-rise neighbourhood context.
    - How will the short ends of the podium relate to the streetscapes they face?
    - Where is the primary entrance and how does it support the public realm?
    - Where is the amenity location for the proposal?
    - What is the parking ratio, and is it suitable to the proximity with the LRT station?
    - How will the proposal provide strong pedestrian connectivity N/S tying the site with access to the LRT?
- A scoped Design Brief is a required submittal for all Site Plan/Re-zoning applications and can be combined with the Planning Rationale. Please see the Design Brief Terms of Reference provided.

This is an exciting project in an area full of potential. We look forward to helping you achieve its goals with the highest level of design resolution. We are happy to assist and answer any questions regarding the above. Good luck.

Engineering (Mohamed Fawzi)
Available Infrastructure:
Clearview Avenue:
Sanitary: 225mm Conc (Install 1967)
Storm: 375mm Conc (Install 1997)
Water: 200mm UCI (Install 1953)

Lanark Avenue:
Sanitary: 250mm PVC (Install 2008)
Storm: 900mm Conc (Install 1993)
Water: 300mm PVC (Install 2007)

**Note: Each lot is only permitted one set of services. Should the subject site not be severed into two municipal lots, the proposed building must be serviced through the existing building.

Water Boundary Conditions:

Will be provided at request of consultant. Requests must include the location of the service and the expected loads required by the proposed development. Please provide the following and submit Fire Flow Calculation Sheet per FUS method with the request:

- Location of service
- Type of development and amount of required fire flow (per FUS method – include FUS calculation sheet with request)
- Average Daily Demand (l/s)
- Maximum Hourly Demand (l/s)
- Maximum Daily Demand (l/s)
- Water Supply Redundancy – Fire Flow:

  Applicant to ensure that a second service with an inline valve chamber be provided where the average daily demand exceeds 50 m^3 / day (0.5787 l/s per day)

  Water services larger than 19 mm require a Water Data Card. Please complete card and submit.

  Stormwater Management (Quantity Control):

- Coefficient (C) of runoff determined as per existing conditions but in no case more than 0.5.
- TC = To be calculated, minimum 10 minutes
- Any storm events greater than 5 year, up to 100 year, and including 100-year storm event must be detained on site (if connecting to Lanark)
- Any storm events greater than 2 year, up to 100 year, and including 100-year storm event must be detained on site (if connecting to Clearview)
- Foundation drains are to be independently connected to sewer main unless being pumped with appropriate back up power, sufficient sized pump and back flow prevention.
- Roof drains are to be connected downstream of any incorporated ICD within the SWM system.

  Stormwater Management (Quality Control):

- Rideau Valley Conservation Authority to provide Quality Controls.

Noise Study:

- Noise study required – property fronts a Collector Road (Lanark Avenue).

Phase I and Phase II ESA:

- Phase I ESA is required; Phase II ESA may be required depending on the results of the Phase I ESA. Phase I ESA must include an EcoLog ERIS Report.
- Phase I ESA and Phase II ESAs must conform to clause 4.8.4 of the Official Plan that requires that development applications conform to Ontario Regulation 153/04.
- Record of Site Condition required due to increase in sensitive land use.

Required Studies

- Stormwater Management Report
- Site Servicing Study
- Geotechnical Study
- Phase I ESA
- Phase II ESA (depends on outcome of Phase I)
- Noise Study
- Wind Study

Required Plans

- Site Servicing Plan
- Grade Control and Drainage Plan
- Erosion and Sediment Control Plan (Can be combined with Grading Plan)

Relevant information

1. The Servicing Study Guidelines for Development Applications are available at the following address: https://ottawa.ca/en/city-hall/planning-and-development/information-developers/development-application-review-process/development-application-submission/guide-preparing-studies-and-plans#servicing-study-guidelines-development-applications
2. Servicing and site works shall be in accordance with the following documents:
   - ⇨ Ottawa Sewer Design Guidelines (October 2012)
   - ⇨ Ottawa Design Guidelines – Water Distribution (2010)
   - ⇨ Geotechnical Investigation and Reporting Guidelines for Development Applications in the City of Ottawa (2007)

- ⇨ City of Ottawa Slope Stability Guidelines for Development Applications (revised 2012)
- ⇨ City of Ottawa Environmental Noise Control Guidelines (January 2016)
- ⇨ City of Ottawa Park and Pathway Development Manual (2012)
- ⇨ City of Ottawa Accessibility Design Standards (2012)
- ⇨ Ottawa Standard Tender Documents (latest version)
- ⇨ Ontario Provincial Standards for Roads & Public Works (2013)

3. Record drawings and utility plans are also available for purchase from the City (Contact the City's Information Centre by email at InformationCentre@ottawa.ca or by phone at (613) 580-2424 x.44455).
4. Any proposed work in utility easements requires written consent of easement owner.

Environmental (Sami Rehman)

- The subject property is across the street from an Urban Natural Feature (UNF), called Riverside Park Woods Natural Area. This is part of the Natural Heritage System and is zoned Environmental Protection (EP). Therefore, an EIS is required to demonstrate no negative impacts on the UNF and associated ecological functions. See OP and EIS guidelines for EIS requirements https://documents.ottawa.ca/sites/documents/files/documents/eis_guidelines2015_en.pdf
- Given that the proposed development is greater than 4 stories, the EIS should review, discuss and recommend design elements from the City's Bird Safe Design Guidelines into it proposed design. https://documents.ottawa.ca/sites/documents/files/birdsafedesign_guidelines_en.pdf
- The EIS should also review and draw best practices from the City's Protocol for Wildlife Protection during Construction. https://documents.ottawa.ca/sites/documents/files/documents/construction_en.pdf
- The applicant is encourages to seek opportunities to increase energy and water efficiency through landscape design, as outlined in OP Section 4.9.
- It is recommended that applicant consult with the Rideau Valley Conservation Authority to determine if any permits or approvals are required under the regulations.
- The subject property is within the Intake Protection Zone, as identified in OP Schedule K. Please ensure the applications meet those policy requirement.
- The applicant is encouraged to review the newly approved Official Plan to ensure they are compliant to the most current policy directions.

Transportation (Neeti Paudel)

- Follow Traffic Impact Assessment Guidelines
  - TIA will be required.
  - Start this process as soon as possible.
  - Applicant advised that their application will not be deemed complete until the submission of the draft step 1-4. Collaboration and communication between development proponents and City staff are required at the end of every step in the TIA process.
- Site is within 600m of the existing transit and future Westboro LRT Station – therefore TOD measures would apply. To achieve target mode shares within TOD zones, we highly recommend developments to provide as many TDM measures as possible and to provide only the minimum number of required parking.
- An update to the TRANS Trip Generation Manual has been completed (October 2020). This manual (attached) is to be utilized for this TIA.
- At site plan:
  - Proposed lay-by on Lanark will be reviewed at site plan. If accepted, this will trigger a RMA.
  - Turning templates will be required for all accesses showing the largest vehicle to access the site; required for internal movements and at all access (entering and exiting and going in both directions).
  - As the site proposed is residential, AODA legislation applies for all areas accessible to the public (i.e. outdoor pathways, parking, etc.). Consider using the City's Accessibility Design Standards.

Forestry (Mark Richardson)

TCR requirements:

1. a Tree Conservation Report (TCR) must be supplied for review along with the suite of other plans/reports required by the City
   a. an approved TCR is a requirement of Site Plan approval.
   b. The TCR may be combined with the LP provided all information is supplied
2. As of January 1 2021, any removal of privately-owned trees 10cm or larger in diameter, or publicly (City) owned trees of any diameter requires a tree permit issued under the Tree Protection Bylaw (Bylaw 2020 – 340); the permit will be based on an approved TCR and made available at or near plan approval.
3. The Planning Forester from Planning and Growth Management as well as foresters from Forestry Services will review the submitted TCR
   a. If tree removal is required, both municipal and privately-owned trees will be addressed in a single permit issued through the Planning Forester

    b. Compensation may be required for city owned trees – if so, it will need to be paid prior to the release of the tree permit
4. the TCR must list all trees on site, as well as off-site trees if the CRZ extends into the developed area, by species, diameter and health condition
5. please identify trees by ownership – private onsite, private on adjoining site, city owned, co-owned (trees on a property line)
6. the TCR must list all trees on adjacent sites if they have a critical root zone that extends onto the development site
7. If trees are to be removed, the TCR must clearly show where they are, and document the reason they cannot be retained
8. All retained trees must be shown and all retained trees within the area impacted by the development process must be protected as per City guidelines available at Tree Protection Specification or by searching Ottawa.ca
    a. the location of tree protection fencing must be shown on a plan
    b. show the critical root zone of the retained trees
    c. if excavation will occur within the critical root zone, please show the limits of excavation
9. the City encourages the retention of healthy trees; if possible, please seek opportunities for retention of trees that will contribute to the design/function of the site.
10. For more information on the process or help with tree retention options, contact Mark Richardson mark.richardson@ottawa.ca or on City of Ottawa

LP tree planting requirements:

For additional information on the following please contact tracy.smith@Ottawa.ca

Minimum Setbacks

- Maintain 1.5m from sidewalk or MUP/cycle track.
- Maintain 2.5m from curb
- Coniferous species require a minimum 4.5m setback from curb, sidewalk or MUP/cycle track/pathway.
- Maintain 7.5m between large growing trees, and 4m between small growing trees. Park or open space planting should consider 10m spacing.
- Adhere to Ottawa Hydro's planting guidelines (species and setbacks) when planting around overhead primary conductors.

Tree specifications

- Minimum stock size: 50mm tree caliper for deciduous, 200cm height for coniferous.
- Maximize the use of large deciduous species wherever possible to maximize future canopy coverage

- Tree planting on city property shall be in accordance with the City of Ottawa's Tree Planting Specification; and include watering and warranty as described in the specification (can be provided by Forestry Services).
- Plant native trees whenever possible
- No root barriers, dead-man anchor systems, or planters are permitted.
- No tree stakes unless necessary (and only 1 on the prevailing winds side of the tree)

Hard surface planting

- Curb style planter is highly recommended
- No grates are to be used and if guards are required, City of Ottawa standard (which can be provided) shall be used.
- Trees are to be planted at grade

Soil Volume

- Please ensure adequate soil volumes are met:

Tree Type/Size	Single Tree Soil Volume (m3)	Multiple Tree Soil Volume (m3/tree)
Ornamental	15	9
Columnar	15	9
Small	20	12
Medium	25	15
Large	30	18
Conifer	25	15

Please note that these soil volumes are not applicable in cases with Sensitive Marine Clay.

Sensitive Marine Clay

- Please follow the City's 2017 Tree Planting in Sensitive Marine Clay guidelines

City Surveyor

- The determination of property boundaries, minimum setbacks and other regulatory constraints are a critical component of development. An Ontario Land Surveyor (O.L.S.) needs to be consulted at the outset of a project to

ensure properties are properly defined and can be used as the geospatial framework for the development.

- Topographic details may also be required for a project and should be either carried out by the O.L.S. that has provided the Legal Survey or done in consultation with the O.L.S. to ensure that the project is integrated to the appropriate control network.

Questions regarding the above requirements can be directed to the City's Surveyor, Bill Harper, at Bill.Harper@ottawa.ca

Community Association (Heather Mitchel (Westboro Community Association))

- The community would prefer a lower rise.
- More sensitivity is required for the adjacent low rise buildings.
- There is a need for 3 bedroom units in the area.
- Consider green / amenity space on the roof of the podium.
- More tree canopy is desirable.
- The applicant should speak with the Councillor about Section 37 benefits.

Next steps

- City Staff encourage applicant to discuss the proposal with Councillor, community groups and neighbours
- City staff to send follow-up email confirming submission requirements

Ottenhof, Maggie

From: Fawzi, Mohammed <mohammed.fawzi@ottawa.ca>
Sent: September 2, 2022 12:00 PM
To: Ottenhof, Maggie
Cc: Nicholas Higginson; Davidson, Steve
Subject: RE: 210 Clearview Avenue ZBLA - Request for Water Boundary Conditions and Sanitary Capacity

Hi Maggie,

This is to confirm there are no constraints regarding sanitary flow.

Thank you and have a great weekend.

Best Regards,

Mohammed Fawzi, P.Eng.
Project Manager
Planning, Infrastructure and Economic Development Department - Services de la planification, de l'infrastructure et du développement économique
Development Review - Central Branch
City of Ottawa | Ville d'Ottawa
110 Laurier Avenue West Ottawa, ON | 110, avenue. Laurier Ouest. Ottawa (Ontario) K1P 1J1
613.580.2424 ext./poste 20120, Mohammed.Fawzi@ottawa.ca

Please note that due to the current situation, I am working remotely. Email is currently the best way to contact me

---

From: Fawzi, Mohammed
Sent: August 29, 2022 11:24 AM
To: Ottenhof, Maggie <Maggie.Ottenhof@wsp.com>
Cc: Nicholas Higginson <NHigginson@homestead.ca>; Davidson, Steve <Steve.P.Davidson@wsp.com>
Subject: RE: 210 Clearview Avenue ZBLA - Request for Water Boundary Conditions and Sanitary Capacity

Hi Maggie,

This is to confirm that your request for boundary conditions has been received. I am also looking into the matter regarding sanitary sewer capacity constraints.

In regards to the required plans/reports. A SWM report is not required for the ZBLA submission. As mentioned below, however, the Adequacy of Servicing Report must include a section that speaks to storm water management such as existing conditions, quantity and quality controls, etc.

Happy to discuss further if needed. Thank you.

Best Regards,

Mohammed Fawzi, P.Eng.
Project Manager
Planning, Infrastructure and Economic Development Department - Services de la planification, de l'infrastructure et du développement économique
Development Review - Central Branch
City of Ottawa | Ville d'Ottawa
110 Laurier Avenue West Ottawa, ON | 110, avenue. Laurier Ouest. Ottawa (Ontario) K1P 1J1
613.580.2424 ext./poste 20120, Mohammed.Fawzi@ottawa.ca

Please note that due to the current situation, I am working remotely. Email is currently the best way to contact me

---

From: Ottenhof, Maggie <Maggie.Ottenhof@wsp.com>
Sent: August 25, 2022 5:00 PM
To: Fawzi, Mohammed <mohammed.fawzi@ottawa.ca>
Cc: Nicholas Higginson <NHigginson@homestead.ca>; Davidson, Steve <Steve.P.Davidson@wsp.com>
Subject: 210 Clearview Avenue ZBLA - Request for Water Boundary Conditions and Sanitary Capacity

Good afternoon,

We are currently preparing an Adequacy of Services Report to support a rezoning application for 200 Clearview Avenue in Ottawa. We have received initial pre-consultation notes from the City and would therefore like to request water boundary conditions. Additionally, we would like to confirm if there is sufficient capacity in the existing 250 mm diameter sanitary sewer on Lanark Avenue and/or sufficient capacity in the 225 mm diameter sanitary sewer along Clearview Avenue. Based on the conceptual design, the demands are as follows:

Water Supply:
Average Day Demand: 1.25 L/s
Maximum Daily Demand: 3.10 L/s
Maximum Hourly Demand: 6.75 L/s
Fire Flow: 83.3 L/s (FUS calculation attached)

Max Day + Fire Flow: 86.4 L/s

Sanitary Demand:
Average Day: 1.25 L/s
Peak: 4.45 L/s

In addition to the requested information above, can you please confirm that an Adequacy of Services Report is sufficient for the ZBLA submission (i.e., a SWM report will not be required for ZBLA)? Our report will include a section on stormwater management quantity and quality control and we will submit a detailed SWM report at the SPCA stage.

Let me know if you need anything further from us or have any questions.

Thank you,
Maggie

Maggie Ottenhof
Municipal Engineer
P.Eng.
She/Her

T+ 1 613-856-0329

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1224 Gardiners Road, Suite 201
Kingston, Ontario
K7P 0G2 Canada

wsp.com

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Ottenhof, Maggie

From: Fawzi, Mohammed <mohammed.fawzi@ottawa.ca>
Sent: September 22, 2022 11:01 AM
To: Ottenhof, Maggie
Cc: Nicholas Higginson; Davidson, Steve
Subject: RE: 210 Clearview Avenue ZBLA - Request for Water Boundary Conditions and Sanitary Capacity
Attachments: 210 Clearview Avenue September 2022.pdf

Hi Maggie,

The following are boundary conditions, HGL, for hydraulic analysis at 210 Clearview Avenue (zone 1W) assumed to be a dual connection to the 305 mm watermain on Lanark Avenue (see attached PDF for location).

Minimum HGL: 108.6 m

Maximum HGL: 115.1 m

Max Day + Fire Flow (83.3 L/s): 109.9 m

These are for current conditions and are based on computer model simulation.

Disclaimer: The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the water distribution system can change on a regular basis, resulting in a variation in boundary conditions. The physical properties of watermains deteriorate over time, as such must be assumed in the absence of actual field test data. The variation in physical watermain properties can therefore alter the results of the computer model simulation.

Best Regards,

Mohammed Fawzi, P.Eng.
Project Manager
Planning, Infrastructure and Economic Development Department - Services de la planification, de l'infrastructure et du développement économique
Development Review - Central Branch
City of Ottawa | Ville d'Ottawa
110 Laurier Avenue West Ottawa, ON | 110, avenue. Laurier Ouest. Ottawa (Ontario) K1P 1J1
613.580.2424 ext./poste 20120, Mohammed.Fawzi@ottawa.ca

Please note that due to the current situation, I am working remotely. Email is currently the best way to contact me

---

From: Ottenhof, Maggie <Maggie.Ottenhof@wsp.com>
Sent: September 19, 2022 9:28 AM

To: Fawzi, Mohammed <mohammed.fawzi@ottawa.ca>
Cc: Nicholas Higginson <NHigginson@homestead.ca>; Davidson, Steve <Steve.P.Davidson@wsp.com>
Subject: RE: 210 Clearview Avenue ZBLA - Request for Water Boundary Conditions and Sanitary Capacity

Hi Mohammed,

Are there any updates regarding the boundary conditions request for Lanark Avenue?

Thanks,
Maggie

Maggie Ottenhof
Municipal Engineer
P.Eng.
She/Her

T+ 1 613-856-0329

WSP Canada Inc.
1224 Gardiners Road, Suite 201
Kingston, Ontario
K7P 0G2 Canada

wsp.com

From: Ottenhof, Maggie
Sent: September 12, 2022 12:00 PM
To: Fawzi, Mohammed <mohammed.fawzi@ottawa.ca>
Cc: Nicholas Higginson <NHigginson@homestead.ca>; Davidson, Steve <Steve.P.Davidson@wsp.com>
Subject: RE: 210 Clearview Avenue ZBLA - Request for Water Boundary Conditions and Sanitary Capacity

Hi Mohammed,

Thank you for confirming. I've attached a revised connection location figure (dual feed from Lanark Avenue).

Thanks,
Maggie

Maggie Ottenhof
Municipal Engineer
P.Eng.
She/Her

T+ 1 613-856-0329

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From: Fawzi, Mohammed <mohammed.fawzi@ottawa.ca>
Sent: September 12, 2022 10:25 AM
To: Ottenhof, Maggie <Maggie.Ottenhof@wsp.com>
Cc: Nicholas Higginson <NHigginson@homestead.ca>; Davidson, Steve <Steve.P.Davidson@wsp.com>
Subject: RE: 210 Clearview Avenue ZBLA - Request for Water Boundary Conditions and Sanitary Capacity

Hi Maggie,

After further review, the 203mm watermain on Clearview is a dead-end main. The site requires two feeds and **both cant be from Clearview i.e. a dead-end.**

Please provide a revised connection location figure, whether it be a dual feed from Lanark or 1st connection from Clearview and the 2nd from Lanark.

Thank you.

Best Regards,

Mohammed Fawzi, P.Eng.
Project Manager
Planning, Infrastructure and Economic Development Department - Services de la planification, de l'infrastructure et du développement économique
Development Review - Central Branch
City of Ottawa | Ville d'Ottawa
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613.580.2424 ext./poste 20120, Mohammed.Fawzi@ottawa.ca

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From: Ottenhof, Maggie <Maggie.Ottenhof@wsp.com>
Sent: September 09, 2022 10:47 AM
To: Fawzi, Mohammed <mohammed.fawzi@ottawa.ca>
Cc: Nicholas Higginson <NHigginson@homestead.ca>; Davidson, Steve <Steve.P.Davidson@wsp.com>
Subject: RE: 210 Clearview Avenue ZBLA - Request for Water Boundary Conditions and Sanitary Capacity

Hi Mohammed,

Are there any updates regarding the boundary conditions request?

Thanks,
Maggie

Maggie Ottenhof
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P.Eng.
She/Her

T+ 1 613-856-0329

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From: Fawzi, Mohammed <mohammed.fawzi@ottawa.ca>
Sent: August 29, 2022 11:24 AM
To: Ottenhof, Maggie <Maggie.Ottenhof@wsp.com>
Cc: Nicholas Higginson <NHigginson@homestead.ca>; Davidson, Steve <Steve.P.Davidson@wsp.com>
Subject: RE: 210 Clearview Avenue ZBLA - Request for Water Boundary Conditions and Sanitary Capacity

Hi Maggie,

This is to confirm that your request for boundary conditions has been received. I am also looking into the matter regarding sanitary sewer capacity constraints.

In regards to the required plans/reports. A SWM report is not required for the ZBLA submission. As mentioned below, however, the Adequacy of Servicing Report must include a section that speaks to storm water management such as existing conditions, quantity and quality controls, etc.

Happy to discuss further if needed. Thank you.

Best Regards,

Mohammed Fawzi, P.Eng.
Project Manager
Planning, Infrastructure and Economic Development Department - Services de la planification, de l'infrastructure et du développement économique
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613.580.2424 ext./poste 20120, Mohammed.Fawzi@ottawa.ca

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From: Ottenhof, Maggie <Maggie.Ottenhof@wsp.com>
Sent: August 25, 2022 5:00 PM
To: Fawzi, Mohammed <mohammed.fawzi@ottawa.ca>
Cc: Nicholas Higginson <NHigginson@homestead.ca>; Davidson, Steve <Steve.P.Davidson@wsp.com>
Subject: 210 Clearview Avenue ZBLA - Request for Water Boundary Conditions and Sanitary Capacity

Good afternoon,

We are currently preparing an Adequacy of Services Report to support a rezoning application for 200 Clearview Avenue in Ottawa. We have received initial pre-consultation notes from the City and would therefore like to request water boundary conditions. Additionally, we would like to confirm if there is sufficient capacity in the existing 250 mm diameter sanitary sewer on Lanark Avenue and/or sufficient capacity in the 225 mm diameter sanitary sewer along Clearview Avenue. Based on the conceptual design, the demands are as follows:

Water Supply:
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Maximum Hourly Demand: 6.75 L/s
Fire Flow: 83.3 L/s (FUS calculation attached)

Max Day + Fire Flow: 86.4 L/s

Sanitary Demand:
Average Day: 1.25 L/s
Peak: 4.45 L/s

In addition to the requested information above, can you please confirm that an Adequacy of Services Report is sufficient for the ZBLA submission (i.e., a SWM report will not be required for ZBLA)? Our report will include a section on stormwater management quantity and quality control and we will submit a detailed SWM report at the SPCA stage.

Let me know if you need anything further from us or have any questions.

Thank you,
Maggie

Maggie Ottenhof
Municipal Engineer
P.Eng.
She/Her

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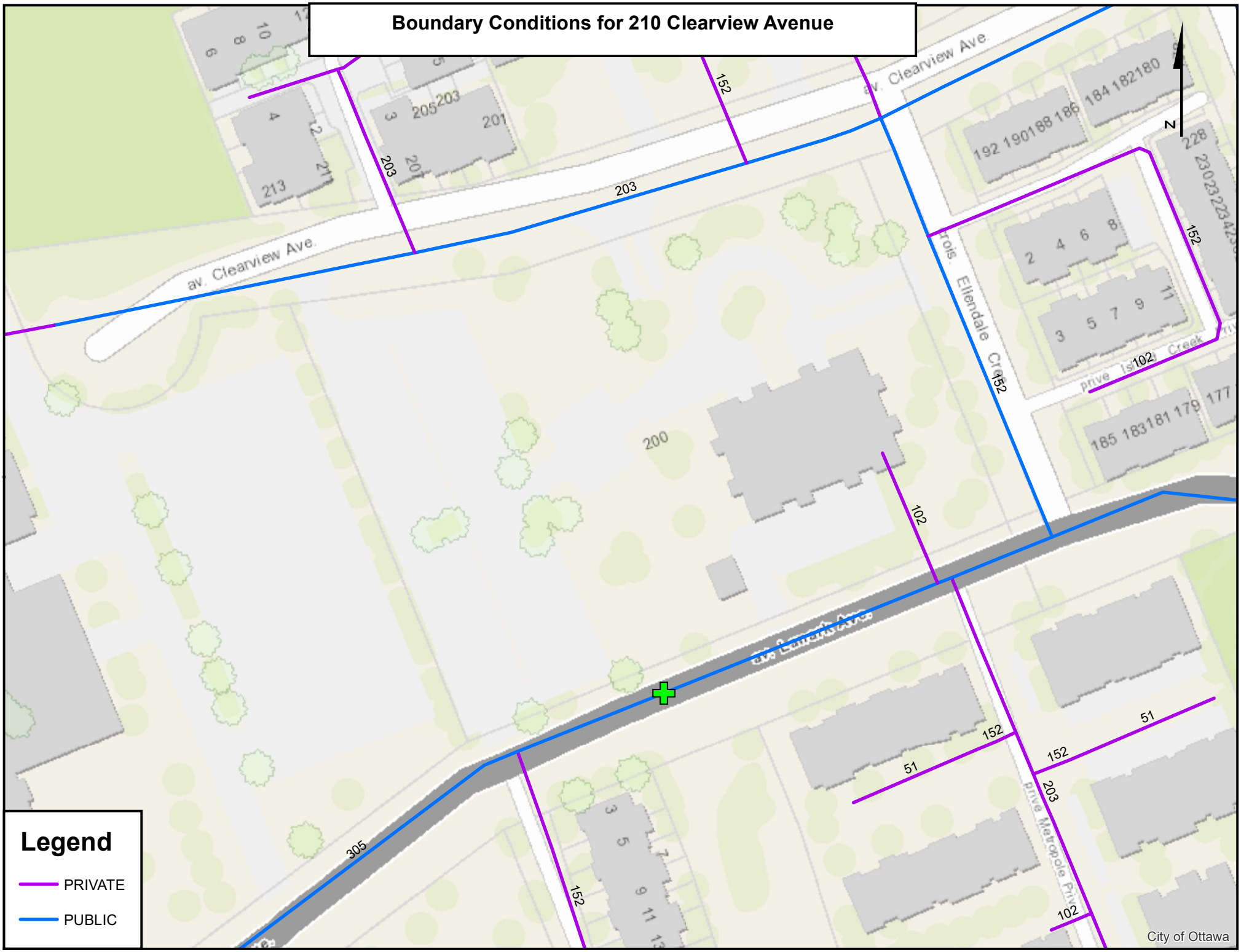
Boundary Conditions for 210 Clearview Avenue



Ottenhof, Maggie

From: Eric Lalande <eric.lalande@rvca.ca>
Sent: September 12, 2022 9:35 AM
To: Ottenhof, Maggie
Cc: Nicholas Higginson
Subject: RE: 210 Clearview Avenue, Ottawa - Confirmation of SWM Quality Criteria

Hi Maggie,

I notice your email shows as having an attachment, although none is present when I open the email.

Based on your email it would appear that enhanced water protection would be required. (i.e., Level 1, enhanced protection 80% Total Suspended Solids (TSS) removal). This is the standard within our watershed, I would typically review site plans to determine if these requirements could be waived, however given the proximity to the outlet, I am not sure that would be the case here.

Thanks,

Eric Lalande, MCIP, RPP
Planner, RVCA
613-692-3571 x1137

From: Ottenhof, Maggie <Maggie.Ottenhof@wsp.com>
Sent: Wednesday, September 7, 2022 1:31 PM
To: Eric Lalande <eric.lalande@rvca.ca>
Cc: Nicholas Higginson <NHigginson@homestead.ca>
Subject: RE: 210 Clearview Avenue, Ottawa - Confirmation of SWM Quality Criteria

Hi Eric,

Following up to the email below – are you able to please confirm the level of stormwater quality treatment required for the proposed development at 210 Clearview Avenue?

Thanks,
Maggie

Maggie Ottenhof
Municipal Engineer
P.Eng.
She/Her

T+ 1 613-856-0329

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Kingston, Ontario
K7P 0G2 Canada

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From: Ottenhof, Maggie
Sent: August 22, 2022 12:20 PM
To: eric.lalande@rvca.ca
Cc: Davidson, Steve <Steve.P.Davidson@wsp.com>; Nicholas Higginson <NHigginson@homestead.ca>
Subject: 210 Clearview Avenue, Ottawa - Confirmation of SWM Quality Criteria

Hi Eric,

We are currently working on a re-zoning application at 210 Clearview Avenue in Ottawa. The 25-storey building development is proposed in the location of the existing parking lot and a portion of greenspace to the west of the existing building. We've received initial pre-consultation comments from the City which includes a note that the RVCA is to provide quality control criteria.

Can you please confirm the level of stormwater quality treatment as per the Ministry of Environment, Conservation and Parks (MECP) Stormwater Management Planning and Design Manuel (i.e., Level 1, enhanced protection 80% Total Suspended Solids (TSS) removal)?

Thank you,
Maggie

Maggie Ottenhof
Municipal Engineer
P.Eng.
She/Her

T+ 1 613-856-0329

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APPENDIX

C

WATER DEMAND AND SANITARY FLOW CALCULATIONS

Table A1 - Proposed Development

DESIGNED BY: Marina St. Marseille, EIT
CHECKED BY: Daniel Searle, P.Eng.

Proposed Building Space Allocation

Building Type	No. of Units	Total Capita	Area (ha)
1 Bedroom Unit (1.4 Persons/Unit)	56	79	-
2 Bedroom Unit (2.1 Persons/Unit)	121	255	-
Amenity Space	-	-	0.1934
Total	**177**	**334**	**0.1934**

Table A2 - Sanitary Sewer Calculation

DRAINAGE DESCRIPTION												OUTLET PIPE DATA				
			Contributing Area		Average Daily Flow, Individual* (L/d)	Average Daily Flow, Cumaltive (L/d)	M	Cumulative Peak Flow (L/d)	Cumaltive Peak Flow (L/s)	Peak Extraneous Flow (L/s)	Q (L/s)	SIZE (mm)	Slope (%)	CAP (L/s)	Q/Qfull	Velocity (m/s)
AREA DESCRIPTION	FROM	TO	No.	Ha												
Apartment Building	Manhole	Street		0.54	98935	98935	3.45	340982	3.95	0.18	**4.13**	**200**	**1.00%**	**32.8**	**0.1**	**1.04**
(Total to ROW)																

DESIGN PARAMETER			
Manning's n =	0.013		City of Ottawa Sewer Design Guidelines (2012), Technical Bulletins
1 & 2 Bedroom Daily Flow (q)=	280	L/cap/d	
Amenity Space (q)=	28,000	L/ha/d	
Infiltration Rate (I) =	0.33	L/s/Ha	
Peaking Factor (M) = $1+14/(4+P^{0.5})*0.8$	3.45	Harmon Formula	

Notes: Refer to Table A1 for population calculations.

Designed By:
Marina St. Marseille, EIT

Checked By:
Daniel Searle, P.Eng

Project Number: 221-08957-00

PROJECT:
210 Clearview Avenue

LOCATION:
Ottawa, Ontario

Date: April 6, 2023

Table A3 - Proposed Domestic Demands
210 Clearview Avenue

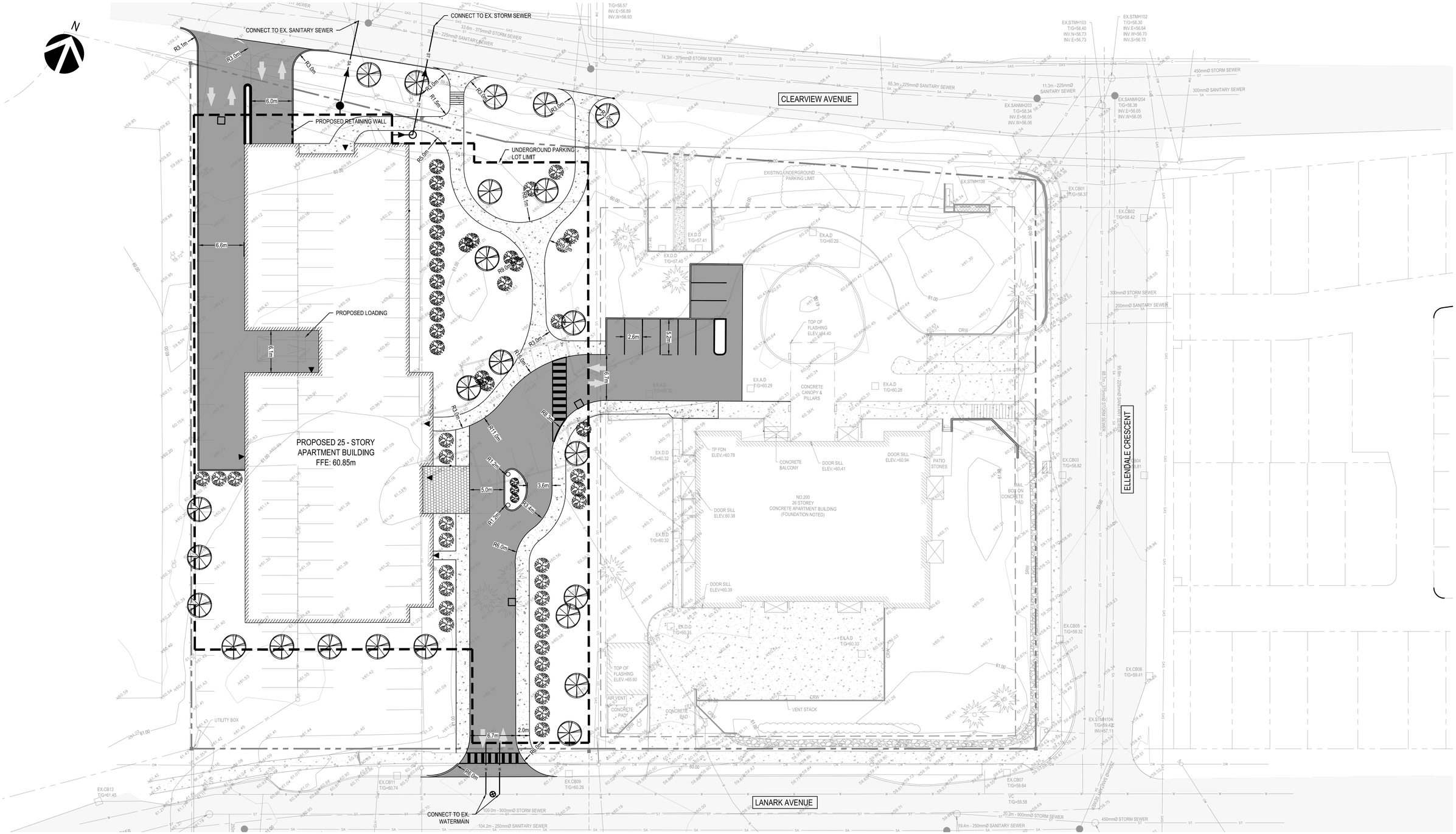
PROPOSED DOMESTIC DEMANDS			REFERENCES
Average Day Demand			
Residential	280	L/cap/d	Ottawa Design Guidelines - Water Distribution (July 2010), Table 4.2
Other Commercial	28,000	L/gross ha/d	Ottawa Design Guidelines - Water Distribution (July 2010), Table 4.2 Technical Bulletins to Water Design Guidelines
Average Day Demand (ADD):			
Residential Population	334	capita	Statistics provided by Owner (via Site Plan dated March 17, 2023)
365 capita x 280 L/cap/d	93520	L/day	
$ADD_{Residential}$ =	**1.08**	**L/s**	
Amenity Space	0.1934	ha	Statistics provided by Owner (via Site Plan dated March 17, 2023)
0.1934 ha x 28,000 L/gross ha/d	5415.2	L/day	
$ADD_{Amenity\ Space}$ =	**0.06**	**L/s**	
ADF_{TOTAL} =	1.15	L/s	Sum of ADD
Maximum Day Demand (MDD):			
Maximum Day $Factor_{Residential}$ =	2.5 x	$ADD_{Residential}$	Ottawa Design Guidelines - Water Distribution (July 2010), Table 4.2
Maximum Day $Factor_{Amenity\ Space}$ =	2.2 x	$ADD_{Amenity\ Space}$	Ottawa Design Guidelines - Water Distribution (July 2010), Table 4.2
$MDD_{Residential}$ =	2.71	L/s	Average Day Demand x Maximum Day Factor
$MDD_{Amenity\ Space}$ =	0.14	L/s	Average Day Demand x Maximum Day Factor
MDD_{TOTAL} =	2.84	L/s	Sum of MDD
Maximum Hour Demand (MHD):			
Maximum Day $Factor_{Residential}$ =	2.2 x	$MDD_{Residential}$	Ottawa Design Guidelines - Water Distribution (July 2010), Table 4.2
Maximum Day $Factor_{Amenity\ Space}$ =	1.8 x	$MDD_{Amenity\ Space}$	Ottawa Design Guidelines - Water Distribution (July 2010), Table 4.2
$MHD_{Residential}$ =	5.95	L/s	Maximum Day Demand x Maximum Hour Factor
$MHD_{Amenity\ Space}$ =	0.25	L/s	Maximum Day Demand x Maximum Hour Factor
MHD_{TOTAL} =	6.20	L/s	Sum of MHD

Designed By: Marina St. Marseille, EIT	**Project:** **210 Clearview Avenue**
Checked By: Daniel Searle, P.Eng	**Location:** **Ottawa, Ontario**
Project Number: 221-08957-00	**Dwg. Reference:** N/A

APPENDIX

D

CONCEPTUAL SITE SERVICING PLAN



FILE: m:\2022\221-08957-00 - 210 clearview avenue\drawing\001. civil\01. production\221-08957-00.pjt.dwg

CTB: wsp_kingston_24x36.ctb
PLOTTED: 2023-04-06 4:43 PM

REV.	DATE	DESCRIPTION	BY
1	2023-04-06	RESUBMITTED FOR ZBLA	DS
0	2022-09-26	ISSUED FOR ZBLA	MO

REVISION:

KEY PLAN:

SEAL:

ORIGINAL SCALE: 1:250
DESIGNED BY: M. HUNTER
DRAWN BY: J. TAN
CHECKED BY: D. SEARLE
DATE: AUGUST 2022

IF THIS BAR IS NOT 25mm LONG, ADJUST YOUR PLOTTING SCALE.
25mm

DISCIPLINE: CIVIL

WSP CANADA INC.
1224 GARDINERS ROAD, SUITE 201
KINGSTON, ONTARIO
CANADA K7P 0G2
PHONE: 613-634-7373
WWW.WSP.COM

PROJECT NUMBER: 221-08957-00

CLIENT: HOMESTEAD

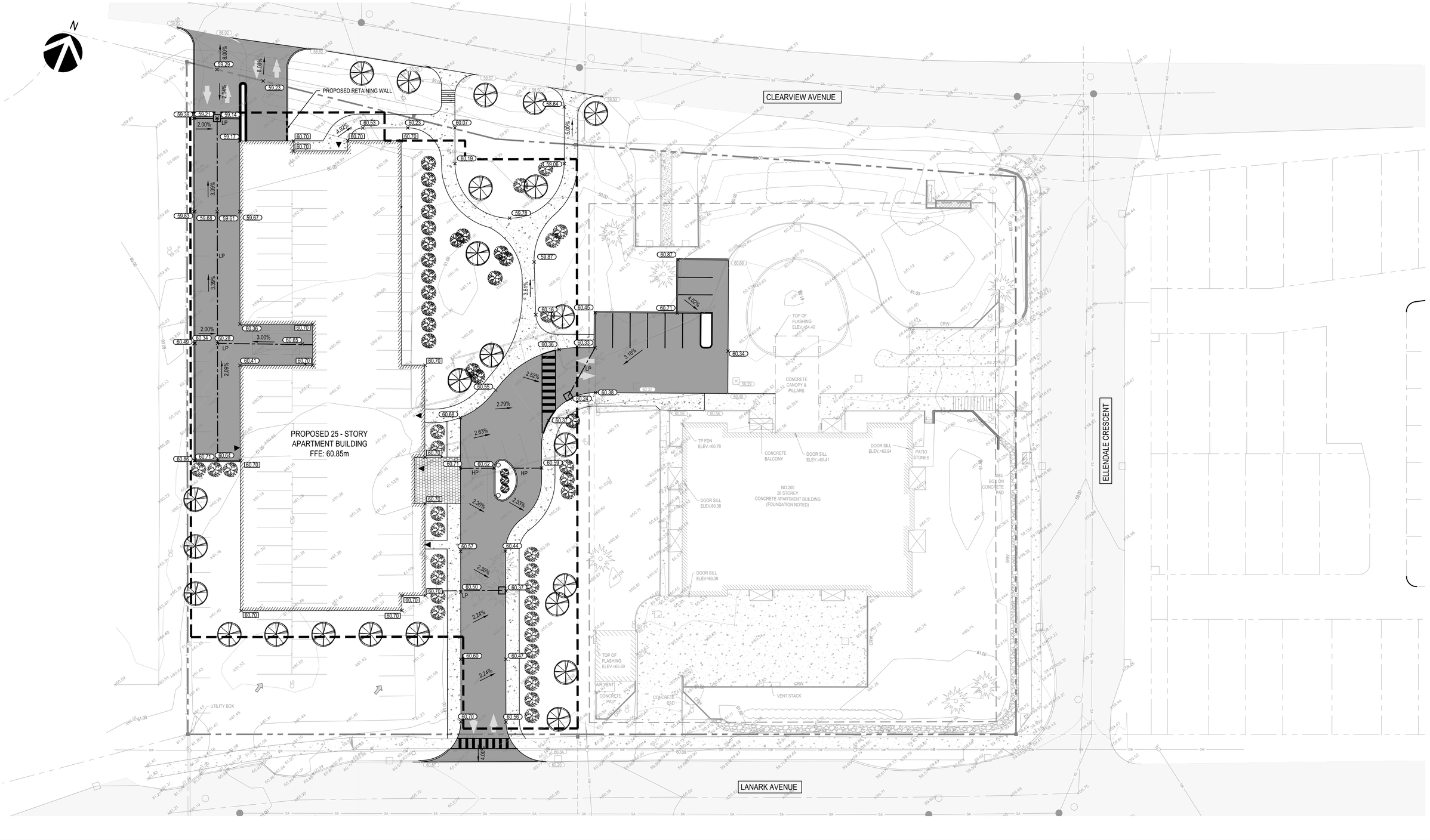
CLIENT REF. #:

TITLE: GENERAL ARRANGEMENT PLAN

PROJECT: 210 CLEARVIEW AVENUE

DRAWING NUMBER: C1

REV.: 0



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CTB: wsp_kingston_24v26.ctb
PLOTTED: 2023-04-06 - 4:20 PM

REV	DATE	DESCRIPTION	BY
1	2023-04-06	RESUBMITTED FOR ZBLA	DS
0	2022-09-26	ISSUED FOR ZBLA	MO

REVISION:

KEY PLAN:

SEAL:

ORIGINAL SCALE: 1:250
DESIGNED BY: M. HUNTER
DRAWN BY: J. TAN
CHECKED BY: D. SEARLE

DATE: AUGUST 2022

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25mm

DISCIPLINE: CIVIL

WSP CANADA INC.
1224 GARDINERS ROAD, SUITE 201
KINGSTON, ONTARIO
CANADA K7P 0G2
PHONE: 613-634-7373
WWW.WSP.COM

PROJECT NUMBER: 221-08957-00

CLIENT: HOMESTEAD

CLIENT REF. #:

TITLE: GRADING PLAN

PROJECT: 210 CLEARVIEW AVENUE

DRAWING NUMBER: C2

REV.: 0

APPENDIX

E FUS CALCULATIONS

APPENDIX E

FUS Fire Demand Calculation Criteria

Base Formula	**$F = 220*C\sqrt{A}$** Where; F = required fire flow in L/min C = construction type coefficient A = total effective floor area (effective building area) in m^2
Construction Type 'C'	1.5 for Type V Wood Frame Construction 0.8 to 1.5 for Type IV (A-D) Mass Timber Construction 1.0 for Type III Ordinary Construction 0.8 for Type II Non-combustible Construction 0.6 for Type I Fire Resistive Construction
Modification of 'F' for occupancy and contents (F_{mod})	Less 25% for Non-combustible Contents Less 15% for Limited Combustible Contents No change for Combustible Contents Plus 15% for Free Burning Contents Plus 25% for Rapid Burning Contents
Reduction of 'F_{mod}' for sprinkler protection	Less 30% for basic NFPA 13 conforming system Additional 10% reduction for standard water lines (system and fire department) Additional 10% reduction for fully supervised system *Maximum 50% reduction in category
Addition of 'F_{mod}' for building exposure (each side)	Plus 25% for 0-3m separation Plus 20% for 3.1-10 m separation Plus 15% for 10.1-20 m separation Plus 10% for 20.1-30 m separation No change for >30 m separation *Maximum total addition of 75% for all sides Table 6 of the FUS should be used to determine the exposure adjustment charges which considers the type of exposed building face.

The base fire demand is calculated based on the construction type and occupancy, then modified based on sprinkler system and proximity to nearby structures.

rla/architecture

March 27, 2023

Attention:

Planner, Development Review
110 Laurier Avenue West
Ottawa, ON K1P 1J1

Re: Building components materials and fire resistance rating (D07-12-22-0053)

On behalf of our client, we are writing this memo to support the city of Ottawa's Site Plan Control request.

The new development located at 210 Clearview Avenue is a 25-storey residential building. The building will be fully sprinklered including the below grade parking structure. Construction will be "non-combustible construction" with a typical reinforced concrete structure and use "noncombustible materials" as per OBC requirements. All structural members including walls, arches, floors, beams and columns will have a minimum of 2 hours fire rating as supported by ULC and UL Standard assemblies.

The design will provide the building with a construction type of "Type II – Noncombustible construction" as per the new 2020 FUS guideline.

We trust this is satisfactory.

Sincerely,

Jolly Shan,
Architect

rla/architecture

56 Beech Street, Ottawa, Ontario K1S 3J6
t.613.724.9932 f.613.724.1209 www.rlaarchitecture.ca

Fire Flow Calculation

210 Clearview Avenue
FIRE UNDERWRITERS SURVEY FIRE FLOW CALCULATION

A = 2623 sq.m 28234 sq.ft (Total Effective Area per FUS 2020)

Formula F = 220 x c x Sq. Root "A"

F = the required fire flow in litres per minute c = the coefficient related to type of construction

A = Floor Area (Per FUS (2020), Total Effective Area, 2(b), largest floor area plus 25% of each of 2 adjoining floors)

STEP 1: TYPE OF CONSTRUCTION TO DETERMINE "c" COEFFICIENT

c: 1.5 for Wood Frame Construction c: 1.0 for Ordinary Construction

c: 0.8 for Non-Combustible Construction c: 0.6 for Fire-Resistive Construction

F= 220 x c	0.8	x Sq. Root "A"	51.2	=	9013.9

STEP 2: INCREASE OR DECREASE FOR OCCUPANCY

Non-Combustible (-0.25%) Charge: Limited Combustible (-15%) Charge: Combustible (0%)

Free Burning (+15%) Charge: Rapid Burning (+25%) Charge

"APPLY ONE OF THESE CHARGES TO THE VALUE OBTAINED IN STEP 1 ROUNDED OFF TO THE NEAREST 1000"

Value from Step 1	9000.0	x	Charge	0.85	=	7650

STEP 3: DETERMINE THE DECREASE FOR SPRINKLER SYSTEM (See FUS for Details)

Adequately Designed System (NFPA 13) -30%, Partial Building Coverage 30% x % of Total Floor Area Serviced

Standard Water Supply -10%, Partial Building Coverage 10% x % of Total Floor Area Serviced

Fully Supervised System -10%, Partial Building Coverage 10% x % of Total Floor Area Serviced

Value from Step 2	7650	x	Above Value	0.4	=	3060
Value from Step 2	7650	-	Answer from Above	3060	=	4590

STEP 4: INCREASE FOR EXPOSURE FROM OTHER BUILDINGS

Maximum Exposure: 0 to 3 m (+ 25%); 3.1 to 10 m (+20%), 10.1 to 20 m (+ 15%); 20.1 to 30 m (+ 10%); 30.1 to 45 m (0%)

Exposure Adjustment Charges per Table 6 (FUS, 2020)

THE TOTAL % SHALL BE THE SUM OF THE % FOR ALL SIDES, BUT SHALL NOT EXCEED 75%

Value from Step 2	7650	x	North Side Step Charge	0.10	=	765
Value from Step 2	7650	x	East Side Step Charge	0.00	=	0
Value from Step 2	7650	x	South Side Step Charge	0.00	=	0
Value from Step 2	7650	x	West Side Step Charge	0.00	=	0
			Total	0.1	=	765

Value from Step 3	4590	+	Total	765	=	5355

STEP 5: TO DETERMINE THE FIRE FLOW

Round to nearest 1000

Take Value from Step 4	5000	Divide by 60	=	83.3	L/S

210 CLEARVIEW - WATERGEMS

Hydraulic Model Properties

Title	210 Clearview - ZBA Submital Water Model
Engineer	Daniel Searle, P.Eng.
Company	WSP Canada Inc.
Date	4/6/2023
Notes	ZBA resubmission model.

Scenario Summary

ID	1
Label	Average Day Demand
Notes	
Active Topology	Base Active Topology
User Data Extensions	Base User Data Extensions
Physical	Base Physical
Demand	Base Demand
Initial Settings	Base Initial Settings
Operational	Base Operational
Age	Base Age
Constituent	Base Constituent
Trace	Base Trace
Fire Flow	Base Fire Flow
Energy Cost	Base Energy Cost
Pressure Dependent Demand	Base Pressure Dependent Demand
Transient	Base Transient
Failure History	Base Failure History
SCADA	Base SCADA
Steady State / EPS Solver Calculation Options	Base Calculation Options
Transient Solver Calculation Options	Base Calculation Options

Hydraulic Summary

Time Analysis Type	Steady State	Simulation Start Date	1/1/2000
Friction Method	Hazen-Williams	Hydraulic Time Step	1.000
Accuracy	0.001	Duration	24.000
Trials	40	Calculation Type	Hydraulics Only

Junction Table - Time: 0.00 hours

ID	Label	Elevation (m)	Demand (L/s)	Hydraulic Grade (m)	Pressure (kPa)	Is Active?
32	J-1	58.30	1.15	109.90	505	True
52	J-4	58.17	0.00	109.90	506	True

Notes

Pipe Table - Time: 0.00 hours

210 CLEARVIEW - WATERGEMS

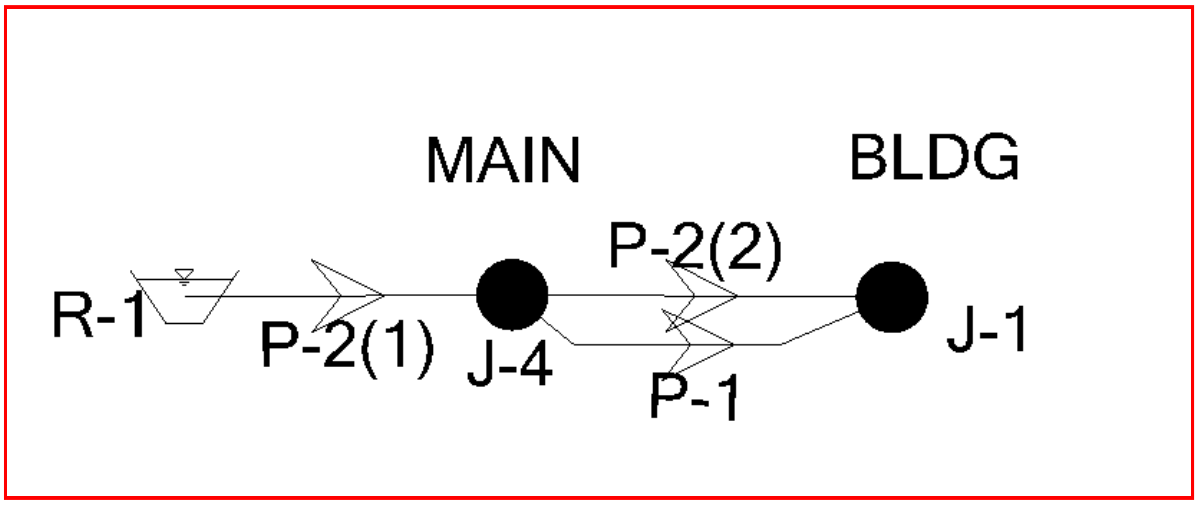
Pipe Table - Time: 0.00 hours

ID	Is Active?	Label	Length (Scaled) (m)	Start Node	Stop Node	Material	Hazen-Williams C	Diameter (mm)	Flow (L/s)	Velocity (m/s)
35	True	P-1	11	J-4	J-1	PVC	110.0	204.0	0.58	0.02
53	True	P-2(1)	9	R-1	J-4	Ductile Iron	140.0	1,000.0	1.15	0.00
54	True	P-2(2)	10	J-4	J-1	PVC	110.0	204.0	0.57	0.02

Reservoir Table - Time: 0.00 hours

ID	Label	Elevation (m)	Flow (Out net) (L/s)	Hydraulic Grade (m)
31	R-1	109.90	1.15	109.90

MODEL SCHEMATIC LAYOUT



210 CLEARVIEW - WATERGEMS

Scenario Summary

ID	41
Label	Peak Hour
Notes	
Active Topology	Base Active Topology
User Data Extensions	Base User Data Extensions
Physical	Peak Hour
Demand	Peak Hour
Initial Settings	Base Initial Settings
Operational	Base Operational
Age	Base Age
Constituent	Base Constituent
Trace	Base Trace
Fire Flow	Base Fire Flow
Energy Cost	Base Energy Cost
Pressure Dependent Demand	Base Pressure Dependent Demand
Transient	Base Transient
Failure History	Base Failure History
SCADA	Base SCADA
Steady State / EPS Solver Calculation Options	Base Calculation Options
Transient Solver Calculation Options	Base Calculation Options

Hydraulic Summary

Time Analysis Type	Steady State	Simulation Start Date	1/1/2000
Friction Method	Hazen-Williams	Hydraulic Time Step	1.000
Accuracy	0.001	Duration	24.000
Trials	40	Calculation Type	Hydraulics Only

Junction Table - Time: 0.00 hours

ID	Label	Elevation (m)	Demand (L/s)	Hydraulic Grade (m)	Pressure (kPa)	Is Active?
32	J-1	58.30	6.20	109.90	505	True
52	J-4	58.17	0.00	109.90	506	True

Notes

Pipe Table - Time: 0.00 hours

ID	Is Active?	Label	Length (Scaled) (m)	Start Node	Stop Node	Material
35	True	P-1	11	J-4	J-1	PVC
53	True	P-2(1)	9	R-1	J-4	PVC
54	True	P-2(2)	10	J-4	J-1	PVC

Hazen-Williams C	Diameter (mm)	Flow (L/s)	Velocity (m/s)

210 CLEARVIEW - WATERGEMS

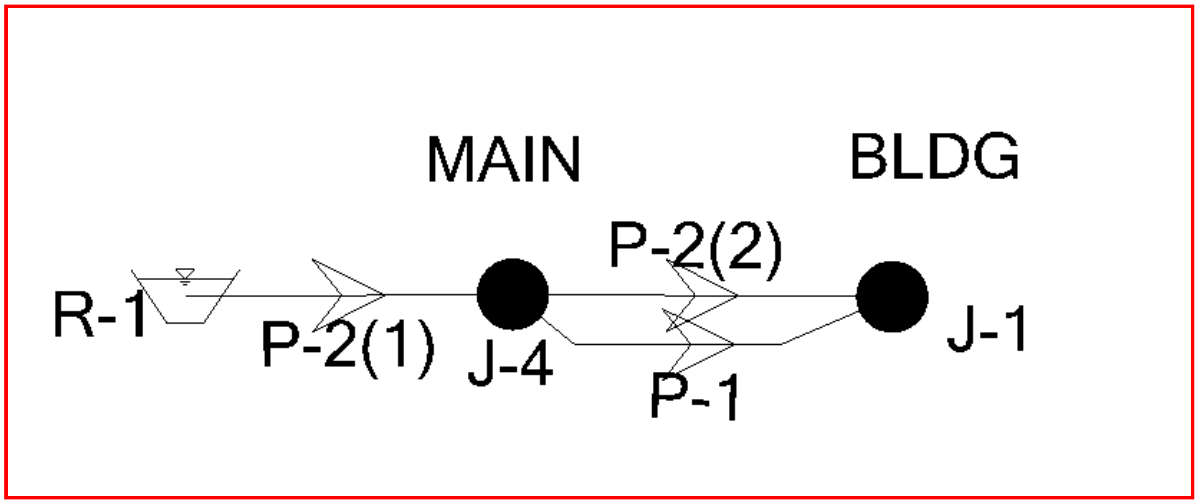
Pipe Table - Time: 0.00 hours

Hazen-Williams C	Diameter (mm)	Flow (L/s)	Velocity (m/s)
110.0	204.0	3.12	0.10
140.0	1,000.0	6.20	0.01
110.0	204.0	3.08	0.09

Reservoir Table - Time: 0.00 hours

ID	Label	Elevation (m)	Flow (Out net) (L/s)	Hydraulic Grade (m)
31	R-1	109.90	6.20	109.90

MODEL SCHEMATIC LAYOUT



210 CLEARVIEW - WATERGEMS

Scenario Summary

ID	47
Label	Max Day + Fire Flow (FUS)
Notes	
Active Topology	Base Active Topology
User Data Extensions	Base User Data Extensions
Physical	Max Day + FF
Demand	Max Day + FF
Initial Settings	Base Initial Settings
Operational	Base Operational
Age	Base Age
Constituent	Base Constituent
Trace	Base Trace
Fire Flow	Base Fire Flow
Energy Cost	Base Energy Cost
Pressure Dependent Demand	Base Pressure Dependent Demand
Transient	Base Transient
Failure History	Base Failure History
SCADA	Base SCADA
Steady State / EPS Solver Calculation Options	Base Calculation Options
Transient Solver Calculation Options	Base Calculation Options

Hydraulic Summary

Time Analysis Type	Steady State	Simulation Start Date	1/1/2000
Friction Method	Hazen-Williams	Hydraulic Time Step	1.000
Accuracy	0.001	Duration	24.000
Trials	40	Calculation Type	Hydraulics Only

Junction Table - Time: 0.00 hours

ID	Label	Elevation (m)	Demand (L/s)	Hydraulic Grade (m)	Pressure (kPa)	Is Active?
32	J-1	58.30	86.14	109.82	504	True
52	J-4	58.17	0.00	109.90	506	True

Notes

Pipe Table - Time: 0.00 hours

ID	Is Active?	Label	Length (Scaled) (m)	Start Node	Stop Node	Material
35	True	P-1	11	J-4	J-1	PVC
53	True	P-2(1)	9	R-1	J-4	Ductile Iron
54	True	P-2(2)	10	J-4	J-1	PVC

Hazen-Williams C	Diameter (mm)	Flow (L/s)	Velocity (m/s)

210 CLEARVIEW - WATERGEMS

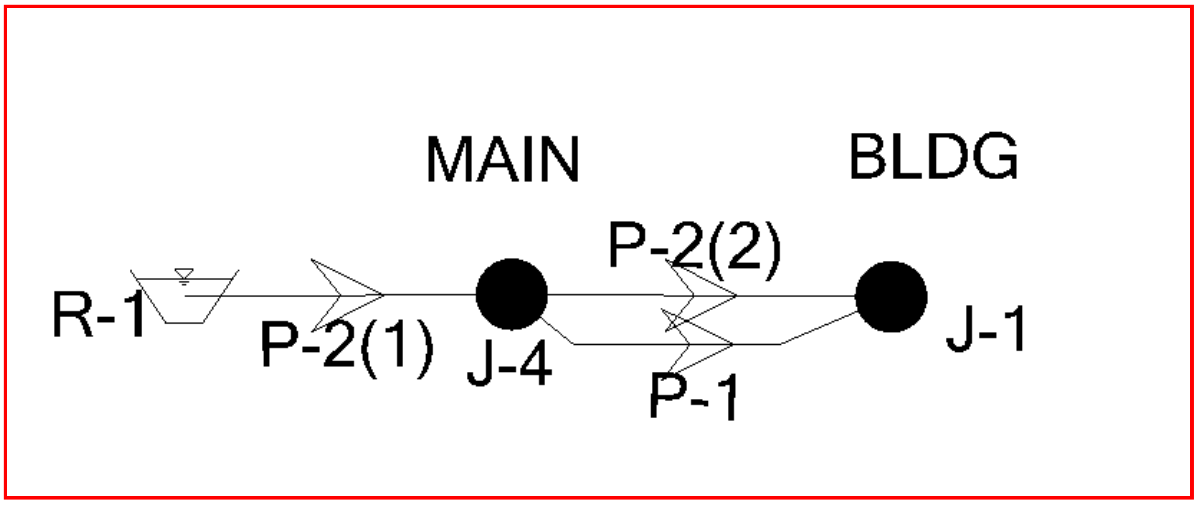
Pipe Table - Time: 0.00 hours

Hazen-Williams C	Diameter (mm)	Flow (L/s)	Velocity (m/s)
110.0	204.0	43.34	1.33
140.0	1,000.0	86.14	0.11
110.0	204.0	42.80	1.31

Reservoir Table - Time: 0.00 hours

ID	Label	Elevation (m)	Flow (Out net) (L/s)	Hydraulic Grade (m)
31	R-1	109.90	86.14	109.90

MODEL SCHEMATIC LAYOUT



APPENDIX

F

STORMWATER MANAGEMENT CALCULATIONS

N

EX.STMH100
T/G=58.83
INV.N=56.94
INV.E=56.98

EX.SANMH200
T/G=58.96
INV.E=56.44

EX.SANMH201
T/G=58.88
INV.N=56.55
INV.E=56.55
INV.W=56.37

EX.SANMH202
T/G=58.55
INV.E=56.26
INV.W=56.29

EX.STMH101
T/G=58.57
INV.E=56.89
INV.W=56.93

EX.STMH103
T/G=58.40
INV.W=56.73
INV.E=56.73

EX.STMH102
T/G=58.30
INV.E=56.64
INV.W=56.70
INV.S=56.70

EX.SANMH203
T/G=58.34
INV.E=56.05
INV.W=56.06

EX.SANMH204
T/G=58.36
INV.E=56.05
INV.W=56.05

VC
T/G=58.34

VC
EX.MH01
T/G=58.37

EX.CB02
T/G=58.42

EX.CB03
T/G=58.82

EX.CB04
T/G=58.81

EX.CB05
T/G=59.32

EX.CB06
T/G=59.4

EX.STMH104
T/G=59.42
INV.W=57.13

EX.CB07
T/G=59.58

EX.CB08
T/G=59.52

EX.STMH105
T/G=59.73
INV.E=57.43
INV.W=57.23

EX.STMH106
T/G=59.66
INV.E=57.37
INV.S=57.31
INV.W=57.37

EX.SANMH205
T/G=59.73
INV.N=56.70
INV.W=56.73

EX.SANMH206
T/G=59.62
INV.S=56.86
INV.W=56.88

EX.CB09
T/G=60.28

EX.CB11
T/G=60.74

EX.CB12
T/G=60.63

EX.CB10
T/G=60.19

EX.CB13
T/G=61.45

VC
T/G=61.22

EX.STMH107
T/G=61.12
INV.E=57.06
INV.W=56.86

EX.CB14
T/G=61.46

EX.SANMH207
T/G=61.07
INV.E=58.52
INV.S=58.61

21.1m - 225mmØ SANITARY SEWER
525mmØ STORM SEWER
200mmØ WATERMAIN
33.6m - 375mmØ STORM SEWER
33.1m - 225mmØ SANITARY SEWER
200mmØ WATERMAIN
74.3m - 375mmØ STORM SEWER
65.3m - 225mmØ SANITARY SEWER
150mmØ WATERMAIN
11.3m - 225mmØ SANITARY SEWER
450mmØ STORM SEWER
300mmØ SANITARY SEWER
200mmØ WATERMAIN
300mmØ STORM SEWER
200mmØ SANITARY SEWER
150mmØ WATERMAIN
95.7m - 375mmØ STORM SEWER
54.4m - 225mmØ SANITARY SEWER
150mmØ WATERMAIN
150mmØ WATERMAIN
109.0m - 900mmØ STORM SEWER
104.2m - 250mmØ SANITARY SEWER
20.2m - 900mmØ STORM SEWER
19.4m - 250mmØ SANITARY SEWER
450mmØ STORM SEWER
94.8m - 1200mmØ STORM SEWER
200mmØ STORM SEWER
200mmØ SANITARY SEWER
150mmØ WATERMAIN

SITE BENCHMARK
FIRE HYDRANT
TOP OF SPINDLE
ELEVATION=59.73

SITE BENCHMARK
FIRE HYDRANT
TOP OF SPINDLE
ELEVATION=61.76

EXISTING UNDERGROUND PARKING LIMIT

A1
0.34ha

A2
0.44ha

A3
0.08ha

B1
0.23ha

EX.A.D
T/G=60.22

EX.D.D
T/G=57.41

EX.D.D
T/G=57.40

EX.A.D
T/G=60.32

EX.A.D
T/G=60.29

EX.A.D
T/G=60.28

EX.D.D
T/G=60.32

EX.D.D
T/G=60.32

EX.D.D
T/G=60.35

EX.A.D
T/G=60.33

GRASS

TOP OF FLASHING ELEV.=64.40

CRW

CONCRETE RAMP

CONCRETE CANOPY & PILLARS

TP FDN ELEV.=60.78

CONCRETE BALCONY

DOOR SILL ELEV.=60.41

DOOR SILL ELEV.=60.94

PATIO STONES

DOOR SILL ELEV.60.38

DOOR SILL ELEV.=60.39

NO.200 CONCRETE APARTMENT BUILDING FOUNDATION (NOTED)

MAIL BOX ON CONCRETE PAD

TOP OF FLASHING ELEV.=65.60

AIR VENT

CONCRETE PAD

CONCRETE PAD

VENT STACK

UTILITY BOX

BLOCK A

BLOCK D

59.00
60.00
61.00

FILE: m:\2022\221-08957-00 - 210 clearview avenue\drawings\01. civil\03. fgs-ab\02. sketches\221-08957-00 sk1 - predev.dwg
CTB: wsp_kingston_24x36.ctb
PLOTTED: 2023-04-06 - 8:32 AM

REVISION:			
1	2023-04-06	RESUBMITTED FOR ZBLA	DS
0	2022-09-26	ISSUED FOR ZBLA	MO
REV	DATE	DESCRIPTION	BY

KEY PLAN:

SEAL:

ORIGINAL SCALE:

DESIGNED BY: M. HUNTER

DRAWN BY: J. TAN

CHECKED BY: D. SEARLE

DATE: AUGUST 2022

IF THIS BAR IS NOT 25mm LONG, ADJUST YOUR PLOTTING SCALE.

25mm

DISCIPLINE: CIVIL

WSP CANADA INC.
1224 GARDINERS ROAD, SUITE 201
KINGSTON, ONTARIO
CANADA K7P 0G2
PHONE: 613-634-7373
WWW.WSP.COM

PROJECT NUMBER: 221-08957-00

CLIENT: HOMESTEAD

CLIENT REF. #:

TITLE: PRE DEVELOPMENT CATCHMENT MAP

PROJECT: 210 CLEARVIEW AVENUE

DRAWING NUMBER: SK1

REV.: 0

N

CLEARVIEW AVENUE

LANARK AVENUE

ELLENDALE CRESCENT

PROPOSED 25 - STORY
APARTMENT BUILDING
FFE: 60.85m

A1
0.58ha

A2
0.39ha

A3
0.08ha

B1
0.04ha

EXISTING UNDERGROUND PARKING LIMIT

NO.200
25 STOREY
CONCRETE APARTMENT BUILDING
(FOR CONTEXT ONLY)

T/G=58.57
INV.E=56.89
INV.W=56.93

33.6m - 375mmØ STORM SEWER

74.3m - 375mmØ STORM SEWER

65.3m - 225mmØ SANITARY SEWER

11.3m - 225mmØ SANITARY SEWER

EX.STMH103
T/G=58.40
INV.N=56.73
INV.E=56.73

EX.STMH102
T/G=58.30
INV.E=56.64
INV.W=56.70
INV.S=56.70

EX.SANMH203
T/G=58.34
INV.E=56.05
INV.W=56.05

EX.SANMH204
T/G=58.38
INV.E=56.05
INV.W=56.05

450mmØ STORM SEWER

300mmØ SANITARY SEWER

300mmØ STORM SEWER

200mmØ SANITARY SEWER

EX.STMH105

EX.CB01
T/G=58.37

EX.CB02
T/G=58.42

EX.CB03
T/G=58.62

EX.CB04
T/G=58.81

EX.CB05
T/G=59.32

EX.CB06
T/G=59.41

EX.STMH104
T/G=59.42
INV=57.11

EX.CB07
T/G=59.64
T/G=59.58

EX.CB08
T/G=60.28

EX.CB09
T/G=60.28

EX.CB11
T/G=60.74

EX.CB13
T/G=61.45

EX.D.D
T/G=57.41

EX.A.D
T/G=60.22

EX.A.D
T/G=60.32

EX.A.D
T/G=60.29

EX.A.D
T/G=60.28

EX.D.D
T/G=60.32

EX.D.D
T/G=60.35

EX.A.D
T/G=60.33

TOP OF FLASHING ELEV.=64.40

TOP OF FLASHING ELEV.=65.60

CONCRETE CANOPY & PILLARS

CONCRETE BALCONY

CONCRETE PAD

TP FDN ELEV.=60.78

DOOR SILL ELEV.=60.41

DOOR SILL ELEV.=60.94

DOOR SILL ELEV.=60.38

DOOR SILL ELEV=60.39

PATIO STONES

WALL BOX ON CONCRETE PAD

CRW

UTILITY BOX

109.0m - 900mmØ STORM SEWER

104.2m - 250mmØ SANITARY SEWER

29.2m - 900mmØ STORM SEWER

19.4m - 250mmØ SANITARY SEWER

450mmØ STORM SEWER

CROSS SECTION SHOWN

REV.	DATE	DESCRIPTION	BY
1	2023-04-06	RESUBMITTED FOR ZBLA	DS
0	2022-09-26	ISSUED FOR ZBLA	MO

KEY PLAN:

SEAL:

ORIGINAL SCALE: 1:250
DESIGNED BY: M. HUNTER
DRAWN BY: J. TAN
CHECKED BY: D. SEARLE
DATE: AUGUST 2022

IF THIS BAR IS NOT 25mm LONG, ADJUST YOUR PLOTTING SCALE.

25mm

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DISCIPLINE: CIVIL

WSP CANADA INC.
1224 GARDINERS ROAD, SUITE 201
KINGSTON, ONTARIO
CANADA K7P 0G2
PHONE: 613-634-7373
WWW.WSP.COM

PROJECT NUMBER: 221-08957-00

CLIENT: HOMESTEAD

CLIENT REF. #:

TITLE: POST DEVELOPMENT CATCHMENT MAP

PROJECT: 210 CLEARVIEW AVENUE

DRAWING NUMBER: SK2

REV.: 0

FILE: n:\2022\221-08957-00 - 210 clearview avenue\drawing\001 civil\03_tp\s-sk\02_sketches\221-08957-00 sk2 - postdev.dwg

CTB: wsp_kingston_24x36.ctb
PLOTTED: 2023-04-06 4:09 PM

210 CLEARVIEW AVENUE REDEVELOPMENT

PRE-DEVELOPMENT

AREA No.	AREA (m^2)	RUNOFF COEFFICIENT	LAND USE
	2246	0.90	Asphalt, Concrete
	0	0.90	Roof Areas
	1177	0.20	Grassed Area
A1	**3424**	**0.66**	
	1858	0.90	Asphalt, Concrete
	829	0.90	Roof Areas
	1746	0.20	Grassed Area
A2	**4433**	**0.62**	
	202	0.90	Asphalt, Concrete
	0	0.90	Roof Areas
	623	0.20	Grassed Area
A3	**825**	**0.37**	
	109	0.90	Asphalt, Concrete
	0	0.90	Roof Areas
	2166	0.20	Grassed Area
B1	**2275**	**0.23**	

POST-DEVELOPMENT

AREA No.	AREA (m^2)	RUNOFF COEFFICIENT	LAND USE
	1498	0.90	Asphalt, Concrete
	1708	0.90	Roof Areas
	2578	0.20	Grassed Area
A1	**5784**	**0.59**	
	1548	0.90	Asphalt, Concrete
	829	0.90	Roof Areas
	1538	0.20	Grassed Area
A2	**3915**	**0.63**	
	202	0.90	Asphalt, Concrete
	0	0.90	Roof Areas
	623	0.20	Grassed Area
A3	**825**	**0.37**	
	109	0.90	Asphalt, Concrete
	0	0.90	Roof Areas
	323	0.20	Grassed Area
B1	**432**	**0.38**	

210 CLEARVIEW AVENUE REDEVELOPMENT
OUTLET 1 (CLEARVIEW/ELLENDALE)

PRE-DEVELOPMENT

AREA No.	AREA (ha)	RUNOFF COEFFICIENT 5 year	RUNOFF COEFFICIENT 100 year	TIME OF CONCENTRATION Tc (min)*	RAINFALL INTENSITY I (mm/hr) 2 year	RAINFALL INTENSITY I (mm/hr) 5 year	RAINFALL INTENSITY I (mm/hr) 100 year	PRE-DEVELOPMENT PEAK FLOW Q (L/s) 2 year	PRE-DEVELOPMENT PEAK FLOW Q (L/s) 5 year	PRE-DEVELOPMENT PEAK FLOW Q (L/s) 100 year
A1	0.34	0.50	0.63	10	76.8	104.2	178.6	37	50	106
A2	0.44	0.62	0.78	10	76.8	104.2	178.6	59	80	172
A3	0.08	0.37	0.46	10	76.8	104.2	178.6	7	9	19
Total =	**0.87**	**0.55**	**0.69**	**Total Pre-Development Flow: Q =**				**102**	**139**	**297**

POST-DEVELOPMENT

AREA No.	AREA (ha)	RUNOFF COEFFICIENT 5 year	RUNOFF COEFFICIENT 100 year	TIME OF CONCENTRATION Tc (min)*	RAINFALL INTENSITY I (mm/hr) 2 year	RAINFALL INTENSITY I (mm/hr) 5 year	RAINFALL INTENSITY I (mm/hr) 100 year	POST-DEVELOPMENT PEAK FLOW Q (L/s) 2 year	POST-DEVELOPMENT PEAK FLOW Q (L/s) 5 year	POST-DEVELOPMENT PEAK FLOW Q (L/s) 100 year
A1	0.58	0.59	0.73	10	76.8	104.2	178.6	73	99	211
A2	0.39	0.63	0.78	10	76.8	104.2	178.6	52	71	152
A3	0.08	0.37	0.46	10	76.8	104.2	178.6	7	9	19
Total =	**1.05**	**0.58**	**0.73**	**Total Post-Development Flow: Q =**				**131**	**178**	**382**

ALLOWABLE POST-DEVELOPMENT FLOW FOR 1:2 YEAR STORM	
Total Pre-Development Flows (A1)	36.6
Total Post-Development Flows (A1)	72.6
Total Uncontrolled Post-Development Flow	0.0
Maximum Allowable Release From Proposed Site (A1)	**36.6**

ALLOWABLE POST-DEVELOPMENT FLOW FOR 1:5 YEAR STORM	
Total Pre-Development Flows (A1)	49.6
Total Post-Development Flows (A1)	98.5
Total Uncontrolled Post-Development Flow	0.0
Maximum Allowable Release From Proposed Site (A1)	**36.6**

ALLOWABLE POST-DEVELOPMENT FLOW FOR 1:100 YEAR STORM	
Total Pre-Development Flows (A1)	106.2
Total Post-Development Flows (A1)	211.0
Total Uncontrolled Post-Development Flow	0.0
Maximum Allowable Release From Proposed Site (A1)	**36.6**

FORMULAS:

Weighted runoff coefficient ; c = $\frac{A_1c_1 + A_2c_{2...}}{A_1 + A_{2...}}$

Time of Concentration ; Tc (min) =

Bransby Williams Formula (where c is greater than 0.40) $\frac{0.057 \times L}{(Sw^{0.2} \times A^{0.1})}$

L: Length of Watershed (m)
Sw: Watershed Slope (%)
A: Watershed Area (ha)

*Minimum time of concentration = 10 min — City of Ottawa Sewer Design Guidelines (2012)

Airport Formula (where c is less than 0.40) $\frac{3.26 \times (1.1 - c) \times L^{0.5}}{Sw^{0.33}}$

c: Weighted Runoff Coefficient
L: Length of Watershed (m)
Sw: Watershed Slope (%)

Rainfall Intensity ; i (mm/hr) = $\frac{A}{(Tc + C)B}$

2-yr: $732.951/(Tc + 6.199)^{0.810}$
5-yr: $998.071/(Tc + 6.053)^{0.814}$
100-yr: $1735.688/(Tc + 6.014)^{0.820}$

Peak Flow ; Q (l/s) = (2.78) x (ciA)

c: Weighted Runoff Coefficient
i: Rainfall Intensity (mm/hr)
A: Drainage Area (hectares)

210 CLEARVIEW AVENUE REDEVELOPMENT
OUTLET 2 (LANARK AVENUE)

PRE-DEVELOPMENT

AREA No.	AREA (ha)	RUNOFF COEFFICIENT 5 year	RUNOFF COEFFICIENT 100 year	TIME OF CONCENTRATION Tc (min)*	RAINFALL INTENSITY I (mm/hr) 2 year	RAINFALL INTENSITY I (mm/hr) 5 year	RAINFALL INTENSITY I (mm/hr) 100 year	PRE-DEVELOPMENT PEAK FLOW Q (L/s) 2 year	PRE-DEVELOPMENT PEAK FLOW Q (L/s) 5 year	PRE-DEVELOPMENT PEAK FLOW Q (L/s) 100 year
B1	0.23	0.23	0.29	19	53.3	72.0	123.0	8	11	23
Total =	**0.23**	**0.23**	**0.29**	**Total Pre-Development Flow: Q =**				**8**	**11**	**23**

ALLOWABLE POST-DEVELOPMENT FLOW FOR 1:2 YEAR STORM	
Total Pre-Development Flows	7.9
Total Post-Development Flows	2.4
Total Uncontrolled Post-Development Flow	0.0
Maximum Allowable Release From Area	**7.9**

ALLOWABLE POST-DEVELOPMENT FLOW FOR 1:5 YEAR STORM	
Total Pre-Development Flows	10.6
Total Post-Development Flows	3.3
Total Uncontrolled Post-Development Flow	0.0
Maximum Allowable Release From Area	**10.6**

POST-DEVELOPMENT

AREA No.	AREA (ha)	RUNOFF COEFFICIENT 5 year	RUNOFF COEFFICIENT 100 year	TIME OF CONCENTRATION Tc (min)*	RAINFALL INTENSITY I (mm/hr) 2 year	RAINFALL INTENSITY I (mm/hr) 5 year	RAINFALL INTENSITY I (mm/hr) 100 year	POST-DEVELOPMENT PEAK FLOW Q (L/s) 2 year	POST-DEVELOPMENT PEAK FLOW Q (L/s) 5 year	POST-DEVELOPMENT PEAK FLOW Q (L/s) 100 year
B1	0.04	0.38	0.47	19	53.3	72.0	123.0	2	3	7
Total =	**0.04**	**0.38**	**0.47**	**Total Post-Development Flow: Q =**				**2**	**3**	**7**

ALLOWABLE POST-DEVELOPMENT FLOW FOR 1:100 YEAR STORM	
Total Pre-Development Flows	22.7
Total Post-Development Flows	7.0
Total Uncontrolled Post-Development Flow	0.0
Maximum Allowable Release From Area	**10.6**

FORMULAS:

Weighted runoff coefficient ; c = $\frac{A_1c_1 + A_2c_{2...}}{A_1 + A_{2...}}$

Time of Concentration ; Tc (min) =

Bransby Williams Formula (where c is greater than 0.40) $\frac{0.057 \times L}{(Sw^{0.2} \times A^{0.1})}$

L: Length of Watershed (m)
Sw: Watershed Slope (%)
A: Watershed Area (ha)

*Minimum time of concentration = 10 min — City of Ottawa Sewer Design Guidelines (2012)

Airport Formula (where c is less than 0.40) $\frac{3.26 \times (1.1 - c) \times L^{0.5}}{Sw^{0.33}}$

c: Weighted Runoff Coefficient
L: Length of Watershed (m)
Sw: Watershed Slope (%)

Rainfall Intensity ; i (mm/hr) = $\frac{A}{(Tc + C)B}$

2-yr: $732.951/(Tc + 6.199)^{0.810}$
5-yr: $998.071/(Tc + 6.053)^{0.814}$
100-yr: $1735.688/(Tc + 6.014)^{0.820}$

A, B, C Values from City of Ottawa Sewer Design Guidelines

Peak Flow ; Q (l/s) = (2.78) x (ciA)

c: Weighted Runoff Coefficient
i: Rainfall Intensity (mm/hr)
A: Drainage Area (hectares)

210 CLEARVIEW AVENUE REDEVELOPMENT

STORMWATER MANAGEMENT VOLUME CALCULATIONS
2 YEAR STORM EVENT
CLEARVIEW AVENUE (A1)

PRE-DEVELOPMENT CONDITIONS

Area (A) =	0.34	ha
Average Runoff Coefficient (C) =	0.50	
Release Rate (Q_2) =	**36.6**	L/s

POST-DEVELOPMENT CONDITIONS (2 YEAR)

Drainage Area A (A) =	0.58	ha
Average Runoff Coefficient (C) =	0.59	
A	732.951	
B	0.810	
C	6.199	
Intensity (I) =	**$A/(Tc+C)^B$**	
Time Interval =	10	mins

	Post-Development					
T_c	$i_{(2)}$	Peak Flow (L/s)	Release Rate (L/s)	Storage Rate (L/s)	$V_{required}$ (m^3)	
0	167.22	158.1	36.6	121.6	0.0	
10	76.81	72.6	36.6	**36.1**	21.6	**V_2**
20	52.03	49.2	36.6	**12.6**	15.2	
30	40.04	37.9	36.6	**1.3**	2.4	
40	32.86	31.1	36.6	**-5.5**	-13.1	
50	28.04	26.5	36.6	**-10.0**	-30.1	
60	24.56	23.2	36.6	**-13.3**	-48.0	
70	21.91	20.7	36.6	**-15.8**	-66.5	
80	19.83	18.7	36.6	**-17.8**	-85.5	
90	18.14	17.2	36.6	**-19.4**	-104.7	
100	16.75	15.8	36.6	**-20.7**	-124.3	
110	15.57	14.7	36.6	**-21.8**	-144.1	
120	14.56	13.8	36.6	**-22.8**	-164.0	
130	13.69	12.9	36.6	**-23.6**	-184.1	
140	12.93	12.2	36.6	**-24.3**	-204.4	
150	12.25	11.6	36.6	**-25.0**	-224.7	
					21.6	**MAXIMUM**

Notes
1) Peak flow is equal to 2.78 x C x I x A
2) Intensity, $I = A/(Tc+C)^B$
3) Release Rate = Allowable Release Rate (Pre-Development)
4) Storage Rate = Peak Flow - Release Rate
5) Storage = Time x Storage Rate
6) Maximum Storage = Max Storage Over Time

210 CLEARVIEW AVENUE REDEVELOPMENT

STORMWATER MANAGEMENT VOLUME CALCULATIONS
5 YEAR STORM EVENT
CLEARVIEW AVENUE (A1)

PRE-DEVELOPMENT CONDITIONS

Area (A) =	0.34	ha
Average Runoff Coefficient (C) =	0.50	
Release Rate (Q_2) =	**36.6**	L/s

POST-DEVELOPMENT CONDITIONS (5 YEAR)

Drainage Area A (A) =	0.58	ha
Average Runoff Coefficient (C) =	0.59	
A	998.071	
B	0.814	
C	6.053	
Intensity (I) =	**$A/(Tc+C)^B$**	
Time Interval =	10	mins

	Post-Development					
T_c	$i_{(2)}$	Peak Flow (L/s)	Release Rate (L/s)	Storage Rate (L/s)	$V_{required}$ (m^3)	
0	230.48	217.9	36.6	181.4	0.0	
10	104.19	98.5	36.6	**62.0**	37.2	**V_5**
20	70.25	66.4	36.6	**29.9**	35.8	
30	53.93	51.0	36.6	**14.4**	26.0	
40	44.18	41.8	36.6	**5.2**	12.5	
50	37.65	35.6	36.6	**-1.0**	-2.9	
60	32.94	31.1	36.6	**-5.4**	-19.5	
70	29.37	27.8	36.6	**-8.8**	-36.9	
80	26.56	25.1	36.6	**-11.4**	-54.9	
90	24.29	23.0	36.6	**-13.6**	-73.4	
100	22.41	21.2	36.6	**-15.4**	-92.2	
110	20.82	19.7	36.6	**-16.9**	-111.3	
120	19.47	18.4	36.6	**-18.1**	-130.6	
130	18.29	17.3	36.6	**-19.3**	-150.2	
140	17.27	16.3	36.6	**-20.2**	-169.9	
150	16.36	15.5	36.6	**-21.1**	-189.7	
					37.2	**MAXIMUM**

Notes
1) Peak flow is equal to 2.78 x C x I x A
2) Intensity, I = $A/(Tc+C)^B$
3) Release Rate = Allowable Release Rate (Pre-Development)
4) Storage Rate = Peak Flow - Release Rate
5) Storage = Time x Storage Rate
6) Maximum Storage = Max Storage Over Time

210 CLEARVIEW AVENUE REDEVELOPMENT

STORMWATER MANAGEMENT VOLUME CALCULATIONS
100 YEAR STORM EVENT
CLEARVIEW AVENUE (A1)

PRE-DEVELOPMENT CONDITIONS

Area (A) =	0.34	ha
Average Runoff Coefficient (C) =	0.50	
Release Rate (Q_2) =	**36.6**	L/s

POST-DEVELOPMENT CONDITIONS (100 YEAR)

Drainage Area A (A) =	0.58	ha
Average Runoff Coefficient (C) =	0.73	
A	1735.688	
B	0.820	
C	6.014	
Intensity (I) =	**$A/(Tc+C)^B$**	
Time Interval =	10	mins

	Post-Development					
T_c	$i_{(100)}$	Peak Flow (L/s)	Release Rate (L/s)	Storage Rate (L/s)	$V_{required}$ (m^3)	
0	398.62	471.1	36.6	434.6	0.0	
10	178.56	211.0	36.6	**174.5**	104.7	
20	119.95	141.8	36.6	**105.2**	126.3	
30	91.87	108.6	36.6	**72.0**	129.6	**V_{100}**
40	75.15	88.8	36.6	**52.3**	125.4	
50	63.95	75.6	36.6	**39.0**	117.1	
60	55.89	66.1	36.6	**29.5**	106.2	
70	49.79	58.8	36.6	**22.3**	93.6	
80	44.99	53.2	36.6	**16.6**	79.8	
90	41.11	48.6	36.6	**12.0**	65.0	
100	37.90	44.8	36.6	**8.2**	49.5	
110	35.20	41.6	36.6	**5.1**	33.4	
120	32.89	38.9	36.6	**2.3**	16.7	
130	30.90	36.5	36.6	**0.0**	-0.3	
140	29.15	34.5	36.6	**-2.1**	-17.6	
150	27.61	32.6	36.6	**-3.9**	-35.3	
					129.6	**MAXIMUM**

Notes
1) Peak flow is equal to 2.78 x C x I x A
2) Intensity, $I = A/(Tc+C)^B$
3) Release Rate = Allowable Release Rate (Pre-Development)
4) Storage Rate = Peak Flow - Release Rate
5) Storage = Time x Storage Rate
6) Maximum Storage = Max Storage Over Time