



Assessment of Adequacy of Public Services Report

6310 Hazeldean Road, Ottawa, ON

Prepared for:

4329163 Canada Inc

Attention: Micheal Uberti

LRL File No.: 220027

April 1st, 2022



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1 INTRODUCTION AND SITE DESCRIPTION

LRL Associates LTD. was retained by 4329163 Canada Inc to prepare a functional serviceability report to support Zoning Bylaw Amendment of the property located at 6310 Hazeldean Road within the City of Ottawa.

The subject site is within the Stittsville Ward, located on the east side of Hazeldean Road, and has an approximate area of **1.20 ha**. Under the City of Ottawa Zoning by-law, the property is currently zoned as AM[2102]. The land is currently vacant, consisting mainly of a large mixed paved and gravel area as well as some landscaping. The subject site can be seen below in Figure 1.



Sewer and watermain mapping, along with as-built information collected from the City of Ottawa indicate the following existing infrastructure located within the adjacent right-of-ways:

Hazeldean Road:

- 375mmØ PVC Sanitary Sewer running across Hazeldean road
- 406mmØ PVC Watermain

Easement at parcel west of Site:

- 450mmØ PVC Sanitary Sewer
- 305mmØ PVC Watermain

No storm sewers are existing in close proximity of subject site, however, a ditch exists within an easement along the east side of the site.

There are no stormwater management measures noted on site. Runoff is currently flowing off the site uncontrolled towards Hazeldean Rd and the existing ditch.

3 CONCEPT DEVELOPMENT

The contemplated development includes three (3) multi-storey mixed-use buildings as well as one (1) level of underground parking and surface parking with access from Hazeldean Road. The contemplated buildings transition down from 9 storeys, to 7 storeys and 3 storeys. The development contemplates a total combined commercial floorspace of **1630 m²** on the ground level and approximately **317** residential units on the upper levels. Refer to the Concept Plan prepared by Fotenn Planning & Design included in **Appendix C**.

4 WATER SUPPLY SERVICING

The subject property lies within the City of Ottawa 3W water distribution network pressure zone. There is an existing 406 mm watermain within Hazeldean Road. There are currently six (6) existing fire hydrants within close proximity of the subject property. Refer to **Appendix D** for the water pressure zone and location of fire hydrants.

According to the City of Ottawa Water Distribution Guidelines (Technical Bulletin ISDTB-2014-02), since the subject site is anticipated to house more than 50 residential units, it is required to be serviced by two water service laterals, separated by an isolation valve, for redundancy and to avoid creation of a vulnerable service area. Hence, the contemplated development is anticipated to be serviced via two (2) 150 mm diameter services connected to the existing 406 mm watermain within Hazeldean Road. The service laterals are to be looped inside the building in coordination with the mechanical engineer at detailed design stage.

Table 1, included below, summarizes the City of Ottawa Design Guidelines design parameters in the preparation of the water demand estimate.



Table 1: City of Ottawa Design Guidelines- Water Design Parameters

Design Parameter	Value
Residential Bachelor / 1 Bedroom Apartment	1.4 P/unit
Residential 2 Bedroom Apartment	2.1 P/unit
Residential 3 Bedroom Apartment	3.1 P/unit
Commercial Average Daily Demand	2.8 L/m ² /d
Average Daily Demand	280 L/d/per
Minimum Depth of Cover	2.4 m from top of watermain to finished grade
Desired operating pressure range during normal operating conditions	350 kPa and 480 kPa
During normal operating conditions pressure must not drop below	275 kPa
During normal operating conditions pressure shall not exceed	552 kPa
During fire flow operating conditions pressure must not drop below	140 kPa
*Table updated to reflect technical Bulletin ISDTB-2018-02	

4.1 Residential Water Demands

Anticipated population demands have been interpreted from the Concept Plan P1 provided by Fotenn. The contemplated development is anticipated to include **317** residential units, which translates to a population of **570.6** as per the City of Ottawa Water Distribution Design Guidelines. Table 1 below summarizes the proposed population count as interpreted using Table 4.1 of the *City of Ottawa Water Distribution Design Guidelines*.

Table 2: Development Residential Population Estimate

Proposed Unit Type	Persons Per Unit	Number of Units	Total Population
Apartments (Average Apartment)	1.8	317	570.6

The required water supply requirements for the residential units in the proposed subdivision have been calculated using the following formula:

Where:

$$Q = (q \times P \times M)$$

q = average water consumption (L/capita/day)

P = design population (capita)

M = Peak factor

With reference to *Table 4.2 of the City of Ottawa Water Distribution Design Guidelines*, using an average water consumption rate of 280 L/c/d, a calculated Maximum Daily Demand Factor and Maximum Hour Demand Factor of 2.5 and 2.2, respectively, anticipated demands were calculated as follows:



- Average daily domestic water demand is **1.85** L/s,
- Maximum daily demand is **4.62** L/s, and
- Maximum hourly demand is **10.17** L/s.

4.2 Commercial Water Demands

As previously mentioned, the concept plan indicates that a portion of the floor area will be dedicated to commercial space. As per Concept Plan P1, this commercial space would work out to a GFA of approximately **1630 m²**.

The required water supply requirements for the commercial space within the proposed subdivision have been calculated using the following formula:

Where:

$$Q = (q \times A \times M)$$

q = average water consumption (L/m²/day)

A = commercial area (m²)

M = Peak factor

With reference to Table 4.2 of the *City of Ottawa Water Distribution Design Guidelines and technical bulletin ISTB-18-02*, using an average water consumption rate of 2.8 L/m²/d, a calculated Maximum Daily Demand Factor and Maximum Hour Demand Factor of 1.5 and 1.8, respectively, anticipated commercial demands were calculated as follows:

- Average daily domestic water demand is **0.05** L/s,
- Maximum daily demand is **0.08** L/s, and
- Maximum hourly demand is **0.14** L/s.

4.3 Total Water Demands & Watermain Sizing

Based on calculated residential and commercial demands for the concept development, the total anticipated water demands are as follows;

- Average daily domestic water demand is **1.90** L/s,
- Maximum daily demand is **4.70** L/s, and
- Maximum hourly demand is **10.31** L/s.

For greater detail on Water Demand Calculations, please refer to **Appendix D**.

The City of Ottawa was contacted to obtain boundary conditions associated with the estimated water demand, as indicated in the boundary request correspondence included in **Appendix D**. Table 3 below summarizes boundary conditions for the proposed development.



Table 2: Summary of Boundary Conditions

Design Parameter	Anticipated Demand (L/s)	Boundary Conditions @ Hazeldean Road	
		Connection 1* (m H2O / kPa)	Connection 2** (m H2O / kPa)
Average Daily Demand	1.90	160.7 / 350.3	160.7 / 354.4
Max Day + Max Fire Flow (per FUS)	4.70 + 316.7	154.4 / 288.9	153.7 / 285.4
Peak Hour	10.31	156.8 / 312.3	156.7 / 315.1
*Ground Elevation assumed at 124.9m for Connection 1			
** Ground Elevation assumed at 124.6m for Connection 2			

As indicated in Table 3, pressures in all scenarios meet the required pressure range stated in Table 1 as per City of Ottawa Design Guidelines. Refer to **Appendix D** for Boundary Conditions. The estimated fire flow for the proposed buildings was calculated in accordance with *ISTB-2018-02*. The following parameters were assumed by Fotenn:

- Type of construction – Ordinary Construction;
- Occupancy type – Limited Combustibility; and
- Sprinkler Protection – Automatic Fully Supervised Sprinkler System.

The maximum estimated fire flow demand was calculated to be **19,000 L/min** for building 2, see **Appendix D** for details.

There are at least six (6) existing fire hydrants in close proximity to the contemplated buildings that are available to provide the maximum required fire flow demands of **19,000 L/min**. Refer to **Appendix D** for fire hydrant locations.

Table 4 below summarizes the aggregate fire flow of the contributing hydrants in close proximity to the proposed development based on Table 18.5.4.3 of *ISTB-2018-02*.

Table 3: Fire Protection Summary Table

	Max. Fire Flow Demand (L/min)	Fire Hydrants(s) within 75m	Fire Hydrant(s) within 150m	Fire Hydrant(s) within 300m	Available Combined Fire Flow (L/min)
Contemplated Development	19,000	2	2	2	(2 x 5678) + (2 x 3785) + (2 x 2839) = 24,604

The total available fire flow from contributing hydrants is equal to **24,604 L/min** which is sufficient to provide adequate fire flow for the proposed development. A certified fire protection system



specialist will need to be employed to design the building's fire suppression system and confirm the actual fire flow demand.

The anticipated water supply design conforms to all relevant City Guidelines and Policies.

5 SANITARY SERVICE

There is an existing municipal sanitary sewer within an easement located at the neighboring property parallel to the western property line of the subject site. As per pre-consultation with City staff, it is anticipated that the contemplated development will connect to the existing 450mm sanitary sewer within the neighboring easement via a single 150 mm diameter sanitary service lateral, to be connected to all proposed buildings through the underground parking garage.

The total anticipated post development total flow was calculated to be is **6.68 L/s** as a result of proposed residential population, commercial use and a small portion of infiltration. Refer to **Appendix E** for further information on the calculated sanitary flows.

Based on information available from Geottawa, the existing 450 mm sanitary sewer located west of property is assumed to be sloped at 0.17% with an existing maximum capacity of **117.6 L/s**. The anticipated wet wastewater flows from the contemplated development represent approximately 5.7% of the maximum existing sewer capacity.

Sanitary capacity would need to be reviewed with the City of Ottawa during detailed design stage to ensure the existing the City sanitary sewer has adequate capacity for the proposed sanitary flows.

6 STORMWATER MANAGEMENT

6.1 Existing Stormwater Infrastructure

The subject property lies within the Poole Creek sub-watershed and is within the Carp River Watershed Plan. There is a ditch located within a 10 m-wide easement along the east side of the site. There are no municipal storm sewers within Hazeldean road right-of-way.

In pre-development conditions, the stormwater runoff from subject site would generally flow uncontrolled overland to north of the site towards Hazeldean roadside ditches and to the east side towards the existing ditch running parallel to the site's east property line. Refer to **Appendix F** for topographical survey showing existing contours and ditches.

6.2 Design Criteria

The stormwater management criteria for this development is based on pre-consultation with City of Ottawa officials, the City of Ottawa Sewer Design Guidelines including City of Ottawa



Stormwater Management Design Guidelines, 2012 (City standards), as well as the Ministry of the Environment’s Stormwater Planning and Design Manual, 2003 (SWMPD Manual).

The stormwater management will need to meet the following stormwater design criteria;

- Meet an allowable release rate based on the pre-development Rational Method Coefficient or a maximum of 0.50, employing the City of Ottawa IDF parameters for a 5-year storm with a calculated time of concentration equal to or greater than 10 minutes; and
- Attenuate all storms up to and including the City of Ottawa 100-year storm event on site.
- Based on coordination with the MVCA, enhanced quality treatment (80% TSS removal) prior to release from site will be required.

6.3 Proposed Stormwater Management System

The contemplated development is anticipated to outlet to the ditch located within the 10m easement on the east side of the subject site. It is anticipated that area drains on the surface parking lot along with roof drains on building rooftops will be utilised to collect and direct runoff to the building’s mechanical system in the underground garage. A storm service lateral outlet will be provided on the east side of the underground garage to discharge the runoff to the ditch.

Based on stormwater objectives for the subject site, the allowable release rate for the contemplated development is **173.50 L/s** for all storms up to and including the 100-year storms. To meet the stormwater objectives, the contemplated development may contain a combination of roof top flow attenuation along with surface and subsurface storage.

Table 5 below summarizes assumed post-development drainage areas based on the *Concept Plan*. Calculations can be seen in **Appendix F**.

Table 5: Post-Development Estimated Areas & Runoff Coefficients

Watershed	C=0.2 Pervious Area (ha)	C=0.9 Building Area/Asphalt (ha)	Total Area (ha)	Weighted Runoff Coefficient
Uncontrolled Areas	0.216	0.101	0.317	0.42
Controlled Areas	0.076	0.805	0.881	0.84
TOTAL	0.292	0.906	1.198	0.73

Table 6, below, summarizes post-development flow rates. The following storage requirement estimate conservatively assumes that approximately 26% of the development area will be directed to the outlet without flow attenuation. These areas will be compensated for in areas with flow attenuation controls.



Table 6: Summary of Post-Development Flow Rates

Catchment Area	Drainage Area (ha)	100-year Release Rate (L/s)	100-Year Required Storage (m3)
Uncontrolled Areas	0.317	82.94	0
Controlled Areas	0.881	90.56	245.84
TOTAL	1.198	173.50	245.84

It is anticipated that approximately **245.84 m³** of storage will be required on site to attenuate flow to the established release rate of **173.50 L/s** in the 100-year storm; storage calculations are contained within **Appendix F**. It is anticipated that the contemplated development will achieve required storage via a combination of roof top flow attenuation along with surface and subsurface storage. Actual storage volumes will need to be confirmed at the detailed design stage based on a number of factors, including grading constraints.

It is anticipated that the contemplated development would utilize an Oil/Grit Separator (OGS) to achieve the required 80% TSS removal treatment as specified by MVCA. The OGS would be required to treat all contaminated runoff collected in the surface parking lot before runoff is discharged into ditch.

7 CONCLUSION

This evaluation is limited to assessing the serviceability of the site described within this document to support an Official Plan Amendment and Zoning By-law Amendment.

Based on the *Concept Plan P1* provided by Fotenn, included to **Appendix C**, the following conclusions, in relation to the serviceability of the site, can be made:

- **Water:**
 - The contemplated development is anticipated to be serviced via a 150mm dual connections to the existing 406mm watermain within Hazeldean rd.
 - Domestic demands from the proposed concept subdivision are expected to be in the range of **1.90 L/s** for the Average daily demand, **4.70 L/s** for the maximum daily and **10.31 L/s** for maximum hourly.
 - The maximum required fire flow was calculated at **19,000 L/min** using the FUS method.
 - There are at least six (6) existing fire hydrants available to service the proposed development. They will provide a combined fire flow of **24,604 L/min** to the site.
- **Sanitary:**
 - The post development total sanitary effluent was calculated to be is **6.68 L/s** considering proposed residential & commercial population and a small portion of infiltration.
 - It is anticipated to service the contemplated development via a 200 mm diameter sanitary service lateral to be connected to the existing 450mm sanitary sewer within the neighboring easement to the west of the site.



- The proposed sanitary discharge represents 5.7% of the maximum capacity of the existing receiving sewer leg.
- **Stormwater:**
 - Site stormwater runoff will need to be controlled to a pre-development release rate of **173.50 L/s** and accommodate **245.84 m³** of stormwater storage during the 100-year storm event.
 - It is anticipated that an OGS will be installed to treat all contaminated runoff to an enhanced quality treatment level (80% TSS removal).
 - The subject site is anticipated to outlet to the ditch within the easement located on the east side of the site.

Shall the concept plan change in relation to the number of units, building footprint, or impervious area of the site, the conclusions above would no longer be appropriate. During the detailed design stage of this development, the storm, sanitary and water servicing details will be further defined and confirmed.

Prepared by:

LRL Associates Ltd.



Amr Salem, PMP
Civil Designer



Virginia Johnson, P.Eng.
Civil Engineer



APPENDIX A

Preconsultation



Pre-Application Consultation Meeting Notes

2:00pm to 3:00pm, November 17, 2021, via Microsoft Teams
Property Address: 6310 Hazeldean Road
File No.: PC2021-0388

Attendees:

Laurel McCreight – Planner, City of Ottawa
Matthew Ippersiel – Urban Designer, City of Ottawa
Justin Armstrong – Project Manager (Infrastructure), City of Ottawa
Josiane Gervais – Project Manager (Transportation), City of Ottawa
Jeffrey Ren – Co-op Student, City of Ottawa
Mark Richardson – Planning Forester, City of Ottawa
Erica Ogden – MVCA
Miguel Tremblay – Fotenn
Rejane Padaratz – Fotenn
Tana Klein – Fotenn
Michael Uberti – Property Owner
Marco Recine – Property Owner

Regrets:

Jaime Posen – Fotenn
Kersten Nitsche – Parks Planner, City of Ottawa

Applicant's Proposal:

- To construct three nine-storey mixed-use buildings with ground floor commercial units. A total of approximately 317 dwelling units are proposed. 2,282 m² of commercial space and 33,544 m² of residential space will be provided along with approximately 96 surface parking spaces and an undetermined number of underground parking spaces, most of the site will have underground parking.

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

Transportation

- Follow Transportation Impact Assessment Guidelines
 - A TIA is required. Submit a Screening Form at your earliest convenience to josiane.gervais@ottawa.ca.
 - TIAs in support of rezoning must demonstrate the worst-case scenario traffic generated from the zoning being sought.
 - Start this process asap. The application will not be deemed complete until the submission of the draft step 1-4.

- An update to the *TRANS Trip Generation Manual* has been completed (October 2020). This manual is to be utilized for this TIA. A copy of this document can be provided upon request.
- ROW protection on Hazeldean between Stittsville west urban limit and Carp Road is 37.5m even.
- TMP identifies Hazeldean Road as a cycling Spine Route.
- The following notes are provided for information and will be applicable at the time of SPA:
 - TIA would require an update to include the Network Design Component Modules of the TIA.
 - If modifications are required to the traffic signal, this would trigger an RMA.
 - Ensure site access meets the City's Private Approach Bylaw.
 - Ensure site access throat length can adequately accommodate forecast traffic volumes.
 - Provide concrete sidewalk along Hazeldean Rd.
 - Show all details of the roads abutting the site up to and including the opposite curb; include such items as pavement markings, accesses and/or sidewalks.
 - Turning movement diagrams required for all accesses showing the largest vehicle to access/egress the site.
 - Turning movement diagrams required for internal movements (loading areas, garbage).
 - Show all curb radii measurements; ensure that all curb radii are reduced as much as possible and fall within TAC guidelines (Figure 8.5.1).
 - Show dimensions for site elements (i.e. lane/aisle widths, access width and throat length, parking stalls, sidewalks, pedestrian pathways, etc.)
 - Sidewalk is not to be continuous across access as per City Specification 7.1.
 - Show slope of garage ramp on site plan. Note that underground ramps should be limited to a 12% grade and must contain a subsurface melting device when exceeding 6%. Ramp grades greater than 15% can be psychological barriers to some drivers.
 - As the proposed site is commercial/institutional/industrial and for general public use, AODA legislation applies. Consider using the City's Accessibility Design Standards.
 - Ensure all crosswalks located internally on the site provide a TWSI at the depressed curb, per requirements of the Integrated Accessibility Standards Regulation under the AODA.

- Parking stalls at the end of dead-end parking aisles require adequate turning around space.
- Grey out any area that will not be impacted by this application.

Please contact Transportation Project Manager Josiane Gervais (Josiane.Gervais@ottawa.ca) for follow-up questions.

Infrastructure

- The Servicing Study Guidelines for Development Applications are available at the following address: <http://ottawa.ca/en/development-application-review-process-0/servicing-study-guidelines-development-applications>
- 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)
- 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).
- Hazeldean Road was resurfaced in 2019 and the road is under a 3-year Road-Cut moratorium into 2022. As such, any road cuts into Hazeldean that are to be made prior to the lifting of the moratorium will be subject to increased fees and higher reinstatement standards. The exact timeline for moratorium lifting can be explored once a formal submission is made.

Storm

- The Stormwater Management Criteria, for the subject site, is to be based on the following:

- i. The 5-yr storm event using the IDF information derived from the Meteorological Services of Canada rainfall data, taken from the MacDonald Cartier Airport, collected 1966 to 1997.
 - ii. The pre-development runoff coefficient or a maximum equivalent 'C' of 0.5, whichever is less (§ 8.3.7.3).
 - iii. A calculated time of concentration (Cannot be less than 10 minutes).
 - iv. Flows in excess of the 5-year storm release rate, up to and including the 100-year storm event, must be detained on site.
 - v. The stormwater outlet for the site is the ditch that crosses the site at the eastern limit.
 - vi. No ponding on drive aisles and parking areas is permitted during the 2-year event.
 - vii. SWM calculations using the modified rational method is acceptable, however, if a combination of surface ponding and underground storage is used, the consultant is reminded to either: (a) use a dynamic computer model or (b) use the modified rational method assuming an average release rate of 50% of the area-specific peak flow rate where above and below ground storage is provided.
- It has been confirmed that there is a 10m wide existing drainage easement OC626261 in place at the site's eastern limit and that this easement is in favour of the City of Ottawa. The conditions set out in the easement must be respected. One of the most important conditions is unimpeded access. The last time the ditch was cleaned a triaxle, large shovel, mini excavator and a bobcat were all used. The full 10m was used then. The City's Operations Branch can be circulated for further comment once a formal application is submitted.
 - Note that the City's Operations branch has previously been contacted regarding the piping of the drainage ditch along the east property boundary. They provided the following in response: Piping of the drainage ditch may be acceptable as long as a thorough SWM assessment is provided for the system up-to and including the downstream DICB. Regardless of the site's portion of the drainage ditch being piped, City operations would still be responsible to maintain the portion of ditch downstream. Also note that due to the past historic flooding issues for this area the City opposes a reduction in the easement width. Further, drainage maintenance staff also indicated that due to rear yard flooding history at a property on Kyle Ave related to the easement and ditch on 6310 Hazeldean, if piping is proposed, the ditch will need to be piped along the site and through other properties to the downstream DICB.

Sanitary

- The available sanitary sewer is located west of the site on the neighbouring property within an easement in favour of the City of Ottawa. If sanitary service is proposed to connect to this sewer section, an easement with the neighbouring property will be required. This is the City's preferred method of connection for this site.
- The City's Asset Management Branch and Sewer Operations Branch have confirmed that, alternatively, connection can be made to the maintenance hole located within the Hazeldean road boulevard. The preferred connection method under this alignment would be for the owner to provide a small sewer extension in the Hazeldean ROW. The sewer extension would be a standard sewer extension and would require MECP ECA approval. The City would eventually assume ownership of the sewer within the ROW. The connection should be made obvert to obvert with the outlet pipe.
- A monitoring maintenance hole shall be required just inside the property line for all non-residential and multi residential buildings connections from a private sewer to a public sewer. The maintenance hole should be located in an accessible location on private property near the property line (i.e., not in a parking area).

Water

- Water Frontage fees may apply if they have not already been paid.
- In order to avoid the creation of a vulnerable service area (VSA) water service redundancy is required if there are more than 49 dwellings/units proposed and/or there is more than 50m³/day of basic day demand.
- The City's Water Meter Group will only accept a single City water meter per property parcel. For multi-building parcels, all buildings can be privately sub metered, however each building should obtain their water supply downstream of the single City water meter
- Water Boundary condition requests must include the location of the service and the expected loads required by the proposed development. Please provide the following information to the Infrastructure Approvals Project Manager:
 - i. GeoOttawa Snippet showing proposed location of service.
 - ii. Type of development and the amount of fire flow required as per ISTB-2021-03 Section 4.2.11.
 - iii. Average daily demand: ___ l/s.
 - iv. Maximum daily demand: ___ l/s.
 - v. Maximum hourly daily demand: ___ l/s.

MECP

- MECP ECA Requirements
- An MECP Environmental Compliance Approval (Private Sewage Works) will be required for the proposed development if the proposal does not meet exemption requirements as outlined in MECP O.Reg 525/989 (3).
- Phase 1 ESAs and Phase 2 ESAs must conform to clause 4.8.4 of the Official Plan that requires that development applications conform to Ontario Regulation 153/04.

Please contact Infrastructure Project Manager Justin Armstrong (Justin.Armstrong@ottawa.ca) for follow-up questions.

MVCA

- The subject property is located within the Poole Creek Subwatershed and is within the Carp River Watershed Subwatershed Plan, which required an annual infiltration rate of 104mm/yr for areas within moderate groundwater recharge.
- The water quality requirement is an enhanced level of protection which requires 80% total suspended solids removal.
- Poole Creek is a cold-cool water system; therefore, temperature mitigation should be incorporated into the stormwater management design.
- For a Zoning By-law Amendment is applied for initially, the stormwater report can be scoped to demonstrate that the above criteria can be achieved on site with the detailed design to follow with Site Plan Control.

Please contact MVCA Planner Erica Ogden (eogden@mvc.on.ca) for follow-up questions.

Urban Design

- Site Organization & Massing
 - Please reorient the middle building to have the front facade follow the geometry of Hazeldean Road. This is supported by the direction of the New Official Plan, the Zoning By-law and the Urban Design Guidelines for Arterial Mainstreets.
 - The space between the two long nine-storey facades will likely create an uncomfortable space. The central building should be shifted to the west and it would be preferable for its footprint to be reconfigured as a “bar” building rather than an “L-shaped” building. If a bar building cannot be achieved, shorten the “arm” of the building from the 46.7m length currently proposed.
- Open Space and Connectivity
 - The inclusion of the POPS/plaza is appreciated, but the space should be relocated to the interior of the site. This would improve access to sunlight, make for a more comfortable, enclosed space, bring needed greening into the courtyard, and could have a better interface with the retail at grade.

- Narrow the pedestrian mid-block connection by shifting the central building footprint to the west and reallocate the space to the east side of the central building. The concept of a mid-block pedestrian connection is supported, but a more valuable location for a strong pedestrian connection would be on the east of the central building, where it can be aligned with the crosswalk on Hazeldean. This will also increase space for wider sidewalks, trees and landscaping, and provide a more prominent “gateway” to the site and greater separation between building facades.
- Ensure that strong and safe pedestrian connections are provided throughout the site.
- Other Design Considerations
 - Reconsider the locations of the garbage enclosures. They should be internalized into the buildings or relocated to the space south of the buildings.
 - Ensure that impacts on the established low-rise residential neighbourhood to the south are minimized. The stepping of the massing is good in this respect. Increase the width of the planting strip along the southern property line and maintain as many existing trees as possible.
- Urban Design Review Panel
 - A Formal Review with the City’s Urban Design Review Panel (UDRP) is required. Please contact the Panel Coordinator to schedule the meeting.
 - Providing the coordinator with an early “heads-up” as to which meeting is being targeted, once it is known, is recommended. A full list of upcoming panel meeting dates, submission deadlines and other information can be found on the UDRP website.
 - Note that a second Formal review with the Panel will be required at the Site Plan Control stage.
- Design Brief
 - A scoped Urban Design Brief is required as a part of your submission. This may be combined with your Planning Rationale report. Please refer to the attached Urban Design Brief Terms of Reference to inform the content of the brief.

Please contact Urban Designer Matthew Ippersiel (Matthew.Ippersiel@ottawa.ca) for follow-up questions.

Parks

- Pursuant to Section 3 and Section 10(1) Parkland Dedication By-law 2009-05, as amended, at the time of Site Plan Control, cash-in-lieu of parkland shall be paid by the Owner as follows:
 - Residential: Uplift of units on the site, not to exceed 10% of the land area of the site
 - Commercial: 2% of site area

- For mixed use development, the parkland requirement for each use will be based upon the above rates prorated proportionately to the GFA allocated to each use

Please contact Parks Planner Kersten Nitsche (Kersten.Nitsche@ottawa.ca) for follow-up questions.

Forestry

TCR Requirements

- A Tree Conservation Report (TCR) must be supplied for review along with the suite of other plans/reports required by the City
- An approved TCR is a requirement of Site Plan approval.
- The TCR may be combined with the LP provided all information is supplied
- 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.
- The Planning Forester from Planning and Growth Management as well as foresters from Forestry Services will review the submitted TCR
- If tree removal is required, both municipal and privately-owned trees will be addressed in a single permit issued through the Planning Forester
- Compensation may be required for city owned trees – if so, it will need to be paid prior to the release of the tree permit
- 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
- please identify trees by ownership – private onsite, private on adjoining site, city owned, co-owned (trees on a property line)
- the TCR must list all trees on adjacent sites if they have a critical root zone that extends onto the development site
- If trees are to be removed, the TCR must clearly show where they are, and document the reason they cannot be retained
- 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
- the location of tree protection fencing must be shown on a plan
- show the critical root zone of the retained trees
- if excavation will occur within the critical root zone, please show the limits of excavation

- 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.
- 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

Please contact Planning Foresters Mark Richardson (Mark.Richardson@ottawa.ca) and Tracey Smith (Tracey.Smith@ottawa.ca) for follow-up questions.

Planning

- Please note that the New Official Plan was approved by City Council on October 27, 2021 and is subject to review by the Ministry of Municipal Affairs and Housing with approval anticipated in February 2022; the application is expected to fall under the New Official Plan.
- Please review all applicable Official Plan policies when they become available to ensure that the proposed development complies with the policies of the New Official Plan.
- Minimum-density requirements as identified in Table 3a will apply (Minimum 120 People and Jobs per Gross Hectare and Dwellings per Net Hectare, minimum 5% and targeted 10% Large-household Dwellings). Please perform the necessary calculations to ensure that the density requirements of the New Official Plan are being met.
- Please address urbanization of Hazeldean Road. If this section of road is not urbanized, please consider how the treatment of your frontage should be handled to ensure there is adequate room for tree planting.
- Please ensure that a 5-metre-wide landscaped buffer is provided along the rear lot line; if a reduction is sought, please rationalize why a 5-metre-wide landscaped buffer cannot be provided. Although there is a vegetation behind the site, fencing may be appropriate given the rear yard condition of the abutting lots. Please note that the provisions of Urban Exception 2102 are specific to the previously existing garden centre and building supply outlet.
- Please consider aligning the middle building with Hazeldean Road, this will ensure that 50% of the lot width within 3 metres of the front lot line is occupied by building walls.
- A privately owned publicly accessible space may not be appropriate along Hazeldean Road – Hazeldean Road is a busy arterial road, and an alternative placement of the POPS/amenity space may be more welcoming. An amenity area behind the middle building may be more appropriate.

- Please ensure that a sufficient number of visitor parking spaces are provided, the surrounding residential neighbourhood has been vocal about their concerns regarding spillover parking.
- Please note that the subject property is not on a transit priority corridor – if there are any parking reductions that are proposed, it will need to be rationalized in the Planning Rationale.
- Garbage pickup should be internalized within the building.
- Please note that the Ottawa Fire Service (OFS) does not approve a fire route that goes over a parking garage structure. If the applicant wishes to pursue this layout, they will have to build the parking garage deck to bridge standard (15 kPa) and provide a stamped letter from an architect/engineer that it has been designed and built to this requirement. This letter will have to be provided to OFS after completion for our records. Additionally, some signage will have to be installed at the site indicating where the edge of the parking structure begins and that it has been designed to meet OFS requirements.
- Please review the [Urban Design Guidelines for Development along Arterial Mainstreet](#) for general design guidance.
- Please reach out to Councillor Glen Gower (Glen.Gower@ottawa.ca) so that the Ward Councillor is aware of the plans for the site.
- A Minor Zoning By-law Amendment application will be required to permit an increased height, please find the application form and information on fees [here](#).
- The application will be subject to public consultation (conducted through the posting of on-site signage, the notification of community groups, and through the City of Ottawa's DevApps website); the statutory public meeting for Zoning By-law Amendments is Planning Committee, however, please note that the Councillor may also ask for a Community Information and Comment Session.

Please contact File Lead Laurel McCreight (Laurel.McCreight@ottawa.ca) for follow-up questions.

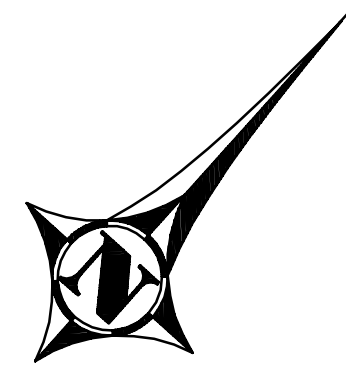
Other

Please refer to the links to the [guide to preparing studies and plans](#) and [development application fees](#) for general information. Additional information is available related to [building permits](#), [development charges](#), and [the Accessibility Design Standards](#). Be aware that other fees and permits may be required, outside of the development review process. You may obtain background drawings by contacting informationcentre@ottawa.ca.

These pre-consultation comments are valid for one year. If you submit a development application(s) after this time, you may be required to meet for another pre-consultation meeting and/or the submission requirements may change. You are as well encouraged to contact us for a follow-up meeting if the plan/concept will be further refined.

APPENDIX B
Site Topographical Survey





PLAN OF TOPOGRAPHIC SURVEY
 OF PART OF
LOT 22
CONCESSION 12
GEOGRAPHIC TOWNSHIP
OF GOULBOURN
CITY OF OTTAWA

McINTOSH PERRY SURVEYING INC

SCALE 1 : 300

0 5 10 15 20 25 30 Metres

METRIC :

DISTANCES AND COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.

SURVEYOR'S CERTIFICATE

I CERTIFY THAT THIS SURVEY WAS COMPLETED ON APRIL 18, 2018.

DATE BRIAN W. KERR
 ONTARIO LAND SURVEYOR

LEGEND AND NOTES

- DENOTES MONUMENT PLANTED
- DENOTES MONUMENT FOUND
- IB DENOTES IRON BAR
- SSIB DENOTES STANDARD IRON BAR
- RPL DENOTES SHORT STANDARD IRON BAR
- RIB DENOTES ROUND IRON BAR
- (m) DENOTES MEASURED
- (p) DENOTES PLAN 4R-23111
- (p2) DENOTES PLAN 4R-19395
- (647) DENOTES H.R. FARLEY, OLS
- (857) DENOTES FAIRHALL, MOFFATT & WOODLAND LIMITED
- (OU) DENOTES ORIGIN UNKNOWN
- N DENOTES NORTH
- S DENOTES SOUTH
- W DENOTES WEST
- ORP DENOTES OBSERVED REFERENCE POINT
- INV DENOTES INVERT
- OBV DENOTES OBVERT
- AN DENOTES ANCHOR
- HP DENOTES HYDRO POLE
- FH DENOTES FIRE HYDRANT
- WV DENOTES WATER VALVE
- MH DENOTES MANHOLE
- CSP DENOTES CORRUGATED STEEL PIPE
- ELEV. DENOTES ELEVATION
- CONC. DENOTES CONCRETE
- BM DENOTES BENCHMARK
- LS DENOTES LIGHT STANDARD
- COM BOX DENOTES COMMUNICATION BOX
- TS DENOTES TRAFFIC SIGNAL
- HH DENOTES HAND HOLE
- MH-TR DENOTES TRAFFIC MANHOLE
- MH-SAN DENOTES SANITARY MANHOLE
- T/G DENOTES TOP OF GRATE
- CULV. DENOTES CULVERT
- BPED DENOTES BELL PEDESTAL
- DS DENOTES DOOR SILL
- CB DENOTES CATCH BASIN

ELEVATIONS ARE CANADA GEODETIC VERTICAL DATUM 1928-1978 DERIVED FROM REAL TIME NETWORK GPS OBSERVATIONS WITH GEOD CORRECTION APPLIED.

SITE BENCHMARK 'A' - TOP OF SPINDLE OF FIRE HYDRANT, HAVING AN ELEVATION OF 124.68m.

SITE BENCHMARK 'B' - TOP OF SPINDLE OF FIRE HYDRANT, HAVING AN ELEVATION OF 125.26m.

SITE BENCHMARK 'C' - TOP OF SPINDLE OF FIRE HYDRANT, HAVING AN ELEVATION OF 125.50m.

DISTANCES SHOWN ON THIS PLAN ARE GROUND DISTANCES AND CAN BE CONVERTED TO GRID DISTANCES BY MULTIPLYING BY A COMBINED SCALE FACTOR OF 0.999909.

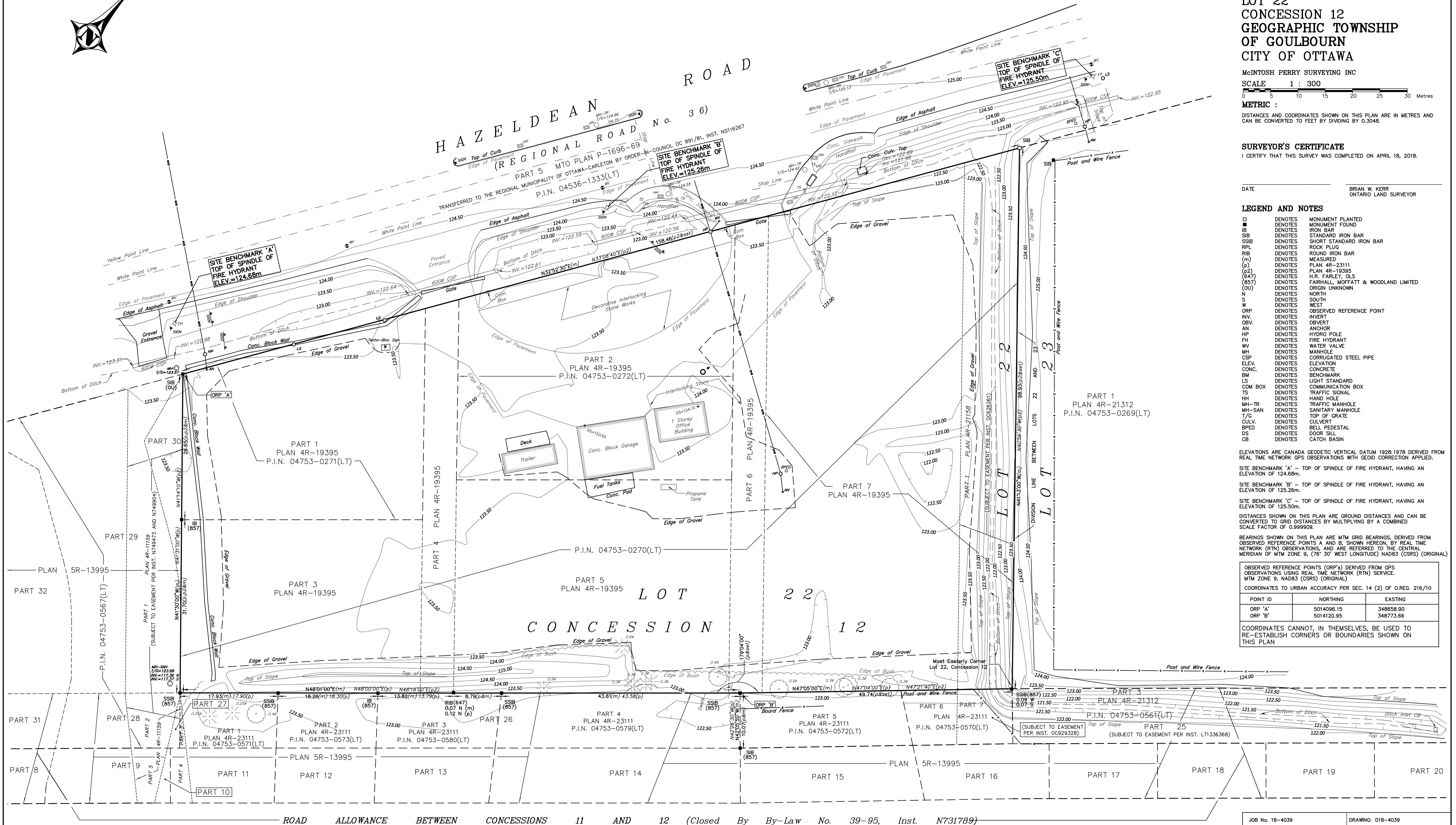
BEARINGS SHOWN ON THIS PLAN ARE MTM GRID BEARINGS, DERIVED FROM OBSERVED REFERENCE POINTS A AND B, SHOWN HEREON, BY REAL TIME NETWORK (RTN) OBSERVATIONS, AND ARE REFERRED TO THE CENTRAL MERIDIAN OF MTM ZONE 9, (76° 30' WEST LONGITUDE) NAD83 (CSRS) (ORIGINAL)

OBSERVED REFERENCE POINTS (ORP's) DERIVED FROM GPS OBSERVATIONS USING REAL TIME NETWORK (RTN) SERVICE. MTM ZONE 9, NAD83 (CSRS) (ORIGINAL)

COORDINATES TO URBAN ACCURACY PER SEC. 14 (2) OF O.REG. 216/10

POINT ID	NORTHING	EASTING
ORP 'A'	5014096.15	348658.90
ORP 'B'	5014120.95	348773.66

COORDINATES CANNOT, IN THEMSELVES, BE USED TO RE-ESTABLISH CORNERS OR BOUNDARIES SHOWN ON THIS PLAN



ROAD ALLOWANCE BETWEEN CONCESSIONS 11 AND 12 (Closed By By-Law No. 39-95, Inst. N731789)

CONCESSION 11

JOB No. 18-4039 DRAWING: D18-4039

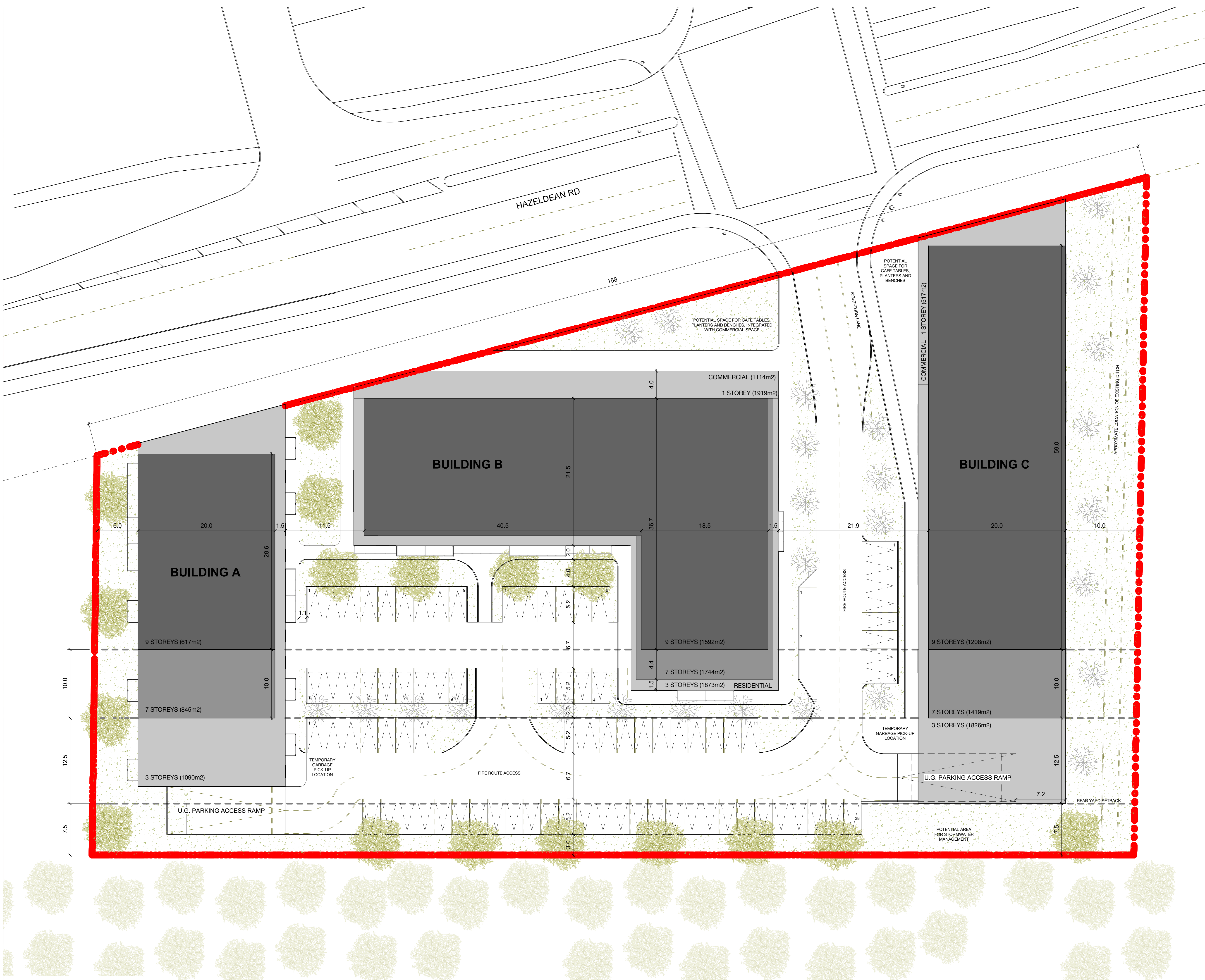
THIS PLAN WAS PREPARED FOR: MPCE (Curtis Melanson)

McINTOSH PERRY SURVEYING INC.
 3240 Drummond Con. 5A, R.R. #7, Perth, ON K7H 3C9
 Tel: 613-267-6524 Fax: 613-267-7992
 www.mcintoshperry.com

EXAMINED: _____ CHECK: _____

APPENDIX C
Concept Plan P1 by Fotenn





SITE INFORMATION

ZONING	AM9(2102)
SITE AREA	Total Site Area: 11,978m ²
HEIGHT	Commercial Ground Floor: 1 Storey (5m) Residential: 8 Storeys (24m) Total: 9 storeys (29m)
PARKING RATES	Required
Residential:	1.0 p/unit
Visitor:	0.2 p/unit
Retail:	3.4/ 100m ² of GFA
AMENITIES RATE	Required 6m ² / p/ unit
SETBACKS	F.Y. S.Y. R.Y. 0m 0m 10m

DEVELOPMENT STATISTICS

RESIDENTIAL UNITS		
Apartments:	-317	
GFA	Commercial	Residential
	-1,630 m ²	-28,634 m ²
TOTAL AREA	Commercial	Residential
	-2,130 m ²	-37,426 m ²
PARKING	Required	Provided
Retail:	62	62 surface
Residential:	317	TBD underground
Visitor:	61	22 surface + 39 u.g.
Total:	439	TBD
AMENITIES	Total Required 6m ² x 317 = 1,902m ² Communal Required (50% min.) 951m ²	
Communal Amenities Provided	TBD	
Private Amenities Provided (Balconies)	TBD	

- NOTES:**
- Assumes typical Residential floor height of 3m. Assumes Retail Ground floor height of 5m.
 - For the purpose of this concept, an average of 90m²/ (968.7sf) unit size is used to calculate approximate total number of units.
 - *GFA: as defined in City of Ottawa Zoning Bylaw means the total area of each floor whether located above, at or below grade, measured from the interiors of outside walls, but excluding areas dedicated for uses such as mechanical and electrical rooms, common hallways, corridors, staircases and elevators, interior amenities, bicycle storage and parking. Assume 85% efficiency for Retail, Office and Apartment buildings. Areas are approximate. Building includes interior amenity areas for the residents.
 - The base plan (lot lines, existing roads and surrounding areas) is based on the City's Open Data and aerial images. The site area is approximate and all dimensions need to be confirmed by a legal survey.
 - This concept may require minor variances for setback reduction, parking, heights, etc.

6310 Hazeldean Rd
OTTAWA
CONCEPT PLAN

NOT FOR CONSTRUCTION

No	REVISION	DATE	BY
6	REVISED CONCEPT PLAN	2022-03-08	TK
5	ARCH. STUDIES (DRAFT)	2022-02-10	TK
4	REVISED CONCEPT PLAN	2022-01-27	TK
3	REVISED CONCEPT PLAN	2022-01-26	TK
2	REVISED CONCEPT PLAN	2021-10-19	TK
1	CONCEPT PLAN	2021-09-24	TK

CLIENT/ OWNER
UBERTI, MICHAEL

Urban Designer, Landscape Architects: Fotenn
396 Cooper Street, Suite 300, Ottawa ON K2P 2H7
Surveyor:

FOTENN
Planning + Design

396 Cooper Street, Suite 300, Ottawa ON K2P 2H7
613.730.5709 www.fotenn.com

DESIGNED	TK
REVIEWED	RP
DATE	2021-09-17

P1

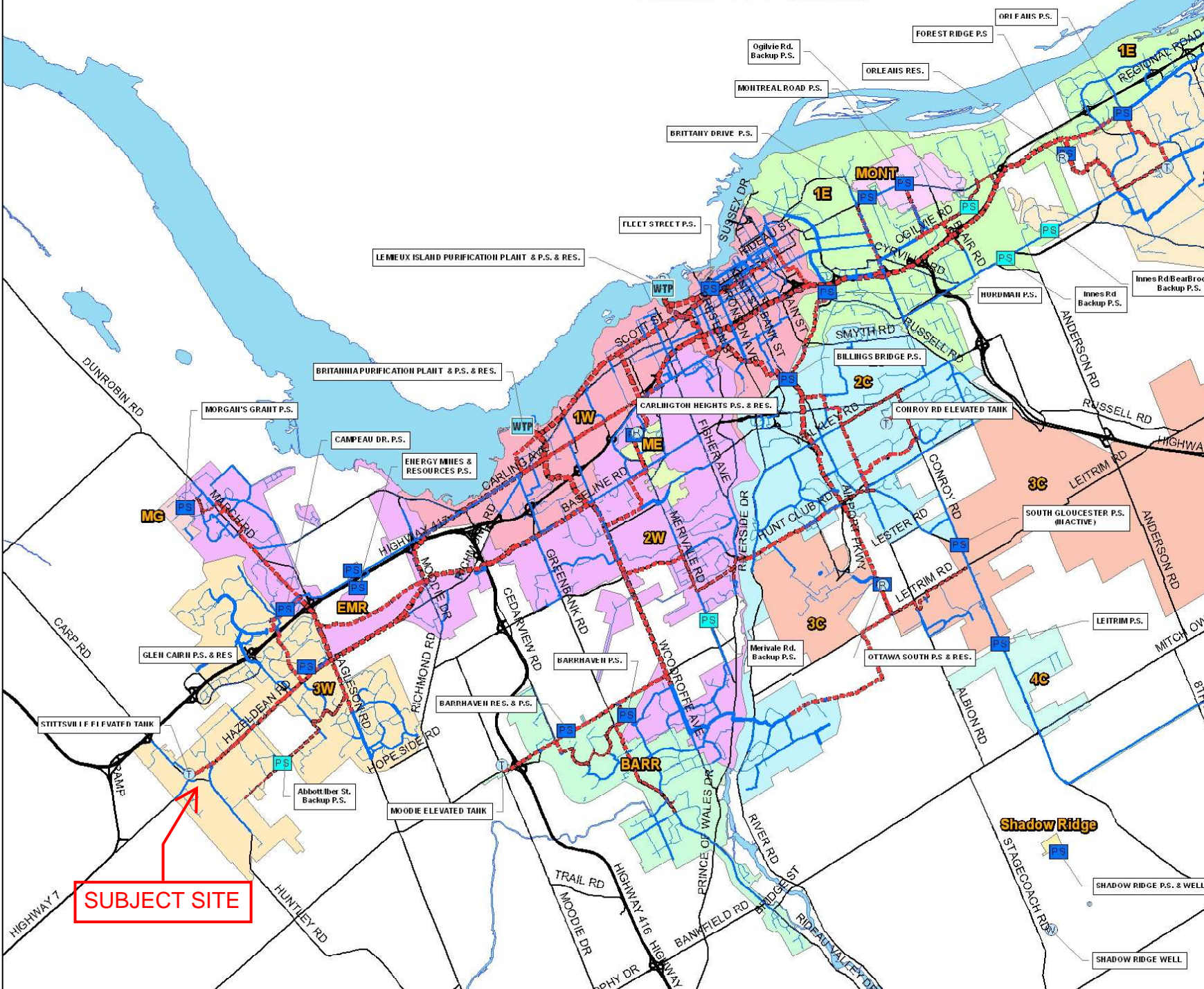
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APPENDIX D

Water Demand Calculations and Figures



City of Ottawa - Water Distribution System Facilities & Feedermains



LOCATION OF FIRE HYDRANTS FIGURE

LEGEND



Hydrants within 75m



Hydrants within 150m



Hydrants within 300m

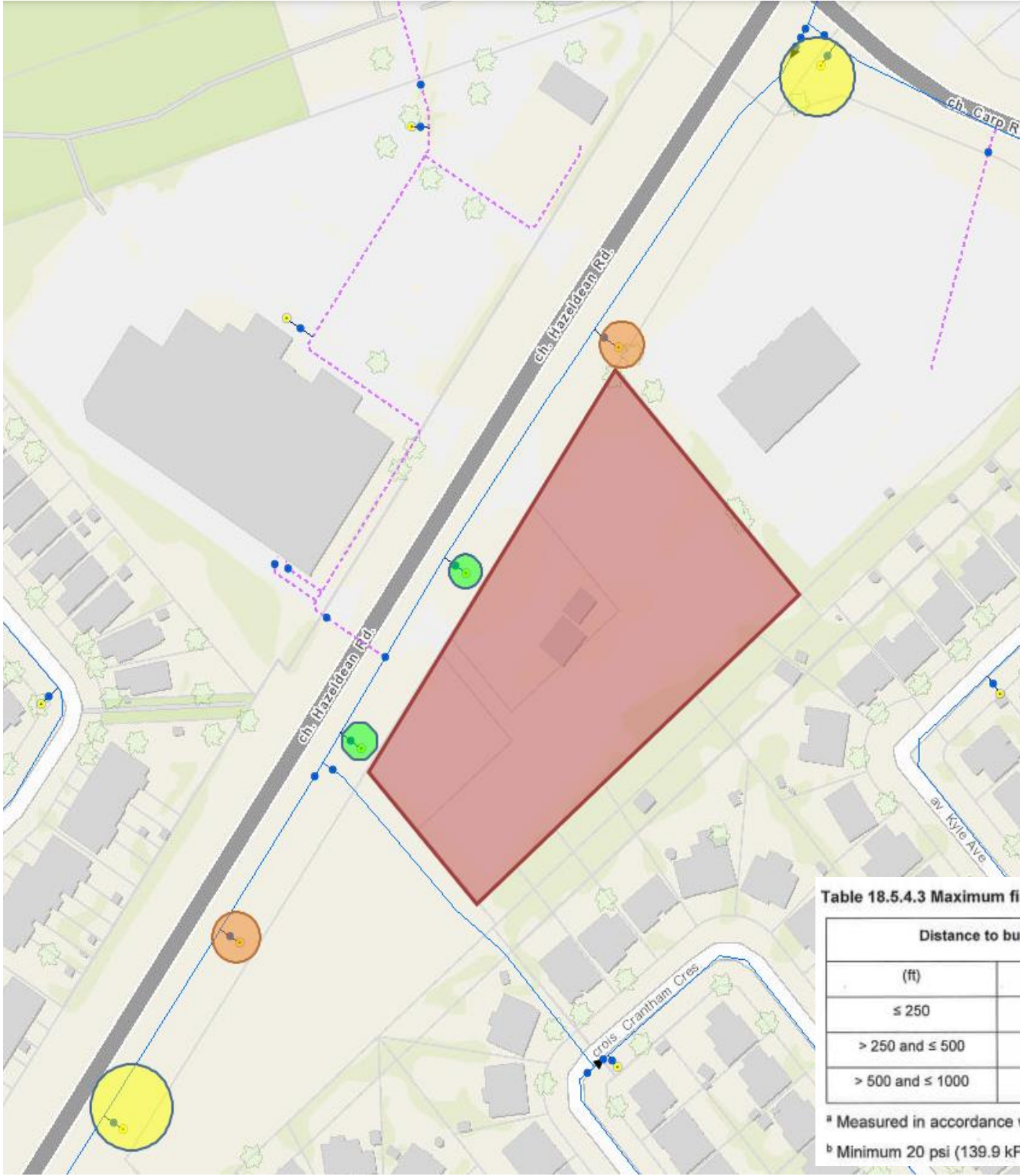


Table 18.5.4.3 Maximum fire flow hydrant capacity

Distance to buildings ^a		Maximum capacity ^b	
(ft)	(m)	(gpm)	(L/min)
≤ 250	≤ 76	1500	5678
> 250 and ≤ 500	> 76 and ≤ 152	1000	3785
> 500 and ≤ 1000	> 152 and ≤ 305	750	2839

^a Measured in accordance with 18.5.1.4 and 18.5.1.5.

^b Minimum 20 psi (139.9 kPa) residual pressure.



Water Supply Calculations

LRL File No. 220027
 Project 6310 Hazeldean
 Date March 3, 2022
 Prepared by Amr Salem

Water Demand based on the City of Ottawa Design Guidelines-Water Distribution, 2010

Domestic Demand			
Unit Type	Persons Per Unit	Number of Units	Population
Average Apartment	1.8	317	570.6
Total		317	570.6

Average Water Consumption Rate 280 L/c/d
Average Day Demand 159,768 L/d 1.85 L/s
 Maximum Day Factor 2.5 (Design Guidelines-Water Distribution Table 4.2)
Maximum Daily Demand 399,420 L/d 4.62 L/s
 Peak Hour Factor 2.2 (Design Guidelines-Water Distribution Table 4.2)
Maximum Hour Demand 878,724 L/d 10.17 L/s

Institutional / Commercial / Industrial Demand			
Property Type	Unit Rate	Units (m ²)	Demand (L/d)
Commercial - Retail	2.8 L/m ² /d	1630.0	4564.0

Average Day Demand 4,564 L/d 0.05 L/s
 Maximum Day Factor 1.5 (Design Guidelines-Water Distribution Table 4.2)
Maximum Daily Demand 6,846 L/d 0.08 L/s
 Peak Hour Factor 1.8 (Design Guidelines-Water Distribution Table 4.2)
Maximum Hour Demand 12,323 L/d 0.14 L/s

TOTAL DEMAND			
Average Day Demand	164,332 L/d	1.90	L/s
Maximum Daily Demand	406,266 L/d	4.70	L/s
Maximum Hour Demand	891,047 L/d	10.31	L/s



Fire Flow Calculations BLDG 1

LRL File No. 210628
 Date March 8, 2022
 Method Fire Underwriters Survey (FUS)
 Prepared by Amr Salem

Step	Task	Term	Options	Multiplier	Choose:	Value	Unit	Fire Flow	
Structural Framing Material									
1	Choose frame used for building	Coefficient C related to the type of construction	Wood Frame	1.5	Ordinary Construction	1			
			Ordinary Construction	1.0					
			Non-combustible construction	0.8					
			Fire resistive construction <2 hrs	0.7					
			Fire resistive construction >2 hrs	0.6					
Floor Space Area (A)									
2			Total area			8,100	m ²		
3	Obtain fire flow before reductions	Required fire flow (rounded to nearest 1,000 L/min)	Fire Flow = 220 x C x A ^{0.5}					L/min	20,000
Reductions or surcharge due to factors affecting burning									
4	Choose combustibility of contents	Occupancy hazard reduction or surcharge	Non-combustible	-25%	Limited combustible	-15%	L/min	17,000	
			Limited combustible	-15%					
			Combustible	0%					
			Free burning	15%					
			Rapid burning	25%					
5	Choose reduction for sprinklers	Sprinkler reduction	Full automatic sprinklers	-30%	True	-30%	L/min	8,500	
			Water supply is standard for both the system and fire department hose lines	-10%	True	-10%			
			Fully supervised system	-10%	True	-10%			
6	Choose separation	Exposure distance between units	North side	>30m	0%	L/min	11,050		
			East side	10.1 to 20m	15%				
			South side	>30m	0%				
			West side	>30m	0%				
Net required fire flow									
7	Obtain fire flow, duration, and volume					Minimum required fire flow rate (rounded to nearest 1000)	L/min	11,000	
						Minimum required fire flow rate	L/s	183.3	
						Required duration of fire flow	hr	2.25	



Fire Flow Calculations - BLDG 2

LRL File No. 210628
 Date March 8, 2022
 Method Fire Underwriters Survey (FUS)
 Prepared by Amr Salem

Step	Task	Term	Options	Multiplier	Choose:	Value	Unit	Fire Flow	
Structural Framing Material									
1	Choose frame used for building	Coefficient C related to the type of construction	Wood Frame	1.5	Ordinary Construction	1			
			Ordinary Construction	1.0					
			Non-combustible construction	0.8					
			Fire resistive construction <2 hrs	0.7					
			Fire resistive construction >2 hrs	0.6					
Floor Space Area (A)									
2			Total area			15,900	m ²		
3	Obtain fire flow before reductions	Required fire flow (rounded to nearest 1,000 L/min)	Fire Flow = 220 x C x A ^{0.5}					L/min	28,000
Reductions or surcharge due to factors affecting burning									
4	Choose combustibility of contents	Occupancy hazard reduction or surcharge	Non-combustible	-25%	Limited combustible	-15%	L/min	23,800	
			Limited combustible	-15%					
			Combustible	0%					
			Free burning	15%					
			Rapid burning	25%					
5	Choose reduction for sprinklers	Sprinkler reduction	Full automatic sprinklers	-30%	True	-30%	L/min	11,900	
			Water supply is standard for both the system and fire department hose lines	-10%	True	-10%			
			Fully supervised system	-10%	True	-10%			
6	Choose separation	Exposure distance between units	North side	>30m	0%		L/min	19,040	
			East side	10.1 to 20m	15%				
			South side	>30m	0%				
			West side	10.1 to 20m	15%				
Net required fire flow									
7	Obtain fire flow, duration, and volume					Minimum required fire flow rate (rounded to nearest 1000)	L/min	19,000	
						Minimum required fire flow rate	L/s	316.7	
						Required duration of fire flow	hr	4.25	



Fire Flow Calculations - BLDG 3

LRL File No. 210628
 Date March 8, 2022
 Method Fire Underwriters Survey (FUS)
 Prepared by Amr Salem

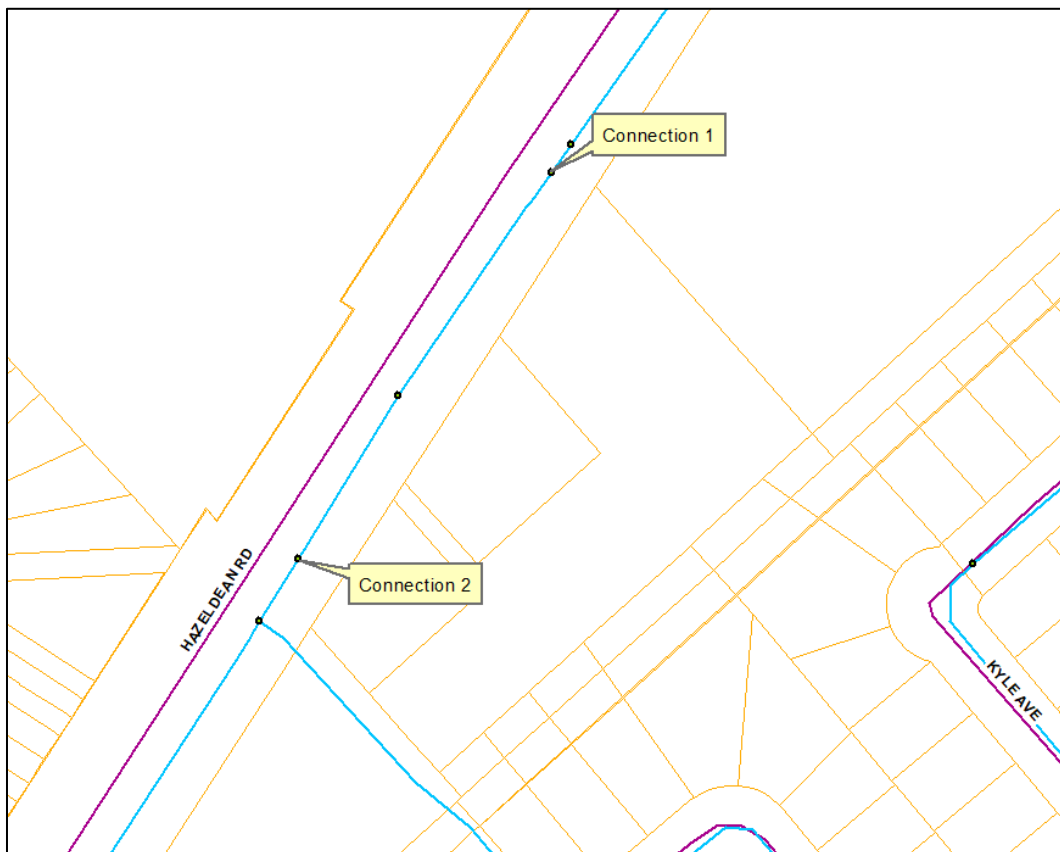
Step	Task	Term	Options	Multiplier	Choose:	Value	Unit	Fire Flow
Structural Framing Material								
1	Choose frame used for building	Coefficient C related to the type of construction	Wood Frame	1.5	Ordinary Construction	1		
			Ordinary Construction	1.0				
			Non-combustible construction	0.8				
			Fire resistive construction <2 hrs	0.7				
			Fire resistive construction >2 hrs	0.6				
Floor Space Area (A)								
2			Total area			13,600	m ²	
3	Obtain fire flow before reductions	Required fire flow (rounded to nearest 1,000 L/min)	Fire Flow = 220 x C x A ^{0.5}				L/min	26,000
Reductions or surcharge due to factors affecting burning								
4	Choose combustibility of contents	Occupancy hazard reduction or surcharge	Non-combustible	-25%	Limited combustible	-15%	L/min	22,100
			Limited combustible	-15%				
			Combustible	0%				
			Free burning	15%				
			Rapid burning	25%				
5	Choose reduction for sprinklers	Sprinkler reduction	Full automatic sprinklers	-30%	True	-30%	L/min	11,050
			Water supply is standard for both the system and fire department hose lines	-10%	True	-10%		
			Fully supervised system	-10%	True	-10%		
6	Choose separation	Exposure distance between units	North side	>30m	0%	L/min	14,365	
			East side	>30m	0%			
			South side	>30m	0%			
			West side	10.1 to 20m	15%			15%
Net required fire flow								
7	Obtain fire flow, duration, and volume	Minimum required fire flow rate (rounded to nearest 1000)					L/min	14,000
		Minimum required fire flow rate					L/s	233.3
		Required duration of fire flow					hr	3

Boundary Conditions 6310 Hazeldean Road

Provided Information

Scenario	Demand	
	L/min	L/s
Average Daily Demand	114	1.90
Maximum Daily Demand	282	4.70
Peak Hour	619	10.31
Fire Flow Demand #1	11,000	183.33
Fire Flow Demand #2	19,000	316.67

Location



Results

Connection 1 – Hazeldean Rd.

Demand Scenario	Head (m)	Pressure ¹ (psi)
Maximum HGL	160.7	50.8
Peak Hour	156.8	45.3
Max Day plus Fire 1	156.2	44.5
Max Day plus Fire 2	154.4	41.9

Ground Elevation = 124.9 m

Connection 2 – Hazeldean Rd.

Demand Scenario	Head (m)	Pressure¹ (psi)
Maximum HGL	160.7	51.4
Peak Hour	156.7	45.7
Max Day plus Fire 1	155.9	44.6
Max Day plus Fire 2	153.7	41.4

Ground Elevation = 124.6 m

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. Fire Flow analysis is a reflection of available flow in the watermain; there may be additional restrictions that occur between the watermain and the hydrant that the model cannot take into account.

APPENDIX E

Sanitary Flow Calculations





LRL File No. 220027
Project: Mixed-Use Development
Location: 6310 hazeldean Road
Date: March 21, 2022

Sanitary Design Parameters
 Average Daily Flow = 280 L/p/day
 Commercial & Institutional Flow = 28000 L/ha/day
 Light Industrial Flow = 35000 L/ha/day
 Heavy Industrial Flow = 55000 L/ha/day
 Maximum Residential Peak Factor = 4.0
 Commercial & Institutional Peak Factor = 1.00

Industrial Peak Factor = as per Appendix 4-B = 7
 Extraneous Flow = 0.33L/s/gross ha

Pipe Design Parameters
 Minimum Velocity = 0.60 m/s
 Manning's n = 0.013

LOCATION			RESIDENTIAL AREA AND POPULATION						COMMERCIAL		INDUSTRIAL			INSTITUTIONAL		C+I+I	INFILTRATION			TOTAL FLOW	PIPE					
STREET	FROM MH	TO MH	AREA (Ha)	POP.	CUMMULATIVE		PEAK FACT.	PEAK FLOW (l/s)	AREA (Ha)	ACCU. AREA (Ha)	AREA (Ha)	ACCU. AREA (Ha)	PEAK FACT.	AREA (Ha)	ACCU. AREA (Ha)	PEAK FLOW (l/s)	TOTAL AREA (Ha)	ACCU. AREA (Ha)	INFILT. FLOW (l/s)	TOTAL FLOW (l/s)	LENGTH (m)	DIA. (mm)	SLOPE (%)	MATERIAL	CAP. (FULL) (l/s)	VEL. (FULL) (m/s)
					AREA (Ha)	POP.																				
Hazeldean rd	Bldg	EX. SAN	1.200	570.6	1.20	570.6	3.4	6.20	0.163	0.163	0.00	0.00	7.0	0.0	0.0	0.08	1.200	1.200	0.40	6.68		200	1.00%	PVC	32.80	1.04

NOTES Existing inverts and slopes are estimated. They are to be confirmed on-site.

Designed: A.S	PROJECT: Mixed-Use Development		
Checked: A.S	LOCATION: 6310 Hazeldean Rd		
Dwg. Reference: C.401	File Ref.: 220027	Date: 2022-03-21	Sheet No. 1 of 1

APPENDIX F

Stormwater Management Calculations



LRL Associates Ltd.
Storm Watershed Summary



LRL File No. 220027
Project: Mixed-use Development
Location: 6310 hazeldean
Date: February 18, 2022
Designed: Amr Salem
Drawing Reference: C701/C702

Pre-Development Catchments

WATERSHED	C = 0.2	C = 0.80	C = 0.90	Total Area (m ²)	Total Area (ha)	Combined C
EWS-01	3055.0	7215.0	1710.0	11980.0	1.198	0.66
TOTAL	3055.0	7215.0	1710.0	11980.0	1.198	0.66

Post-Development Catchments

WATERSHED	C = 0.20	C = 0.70	C = 0.90	Total Area (m ²)	Total Area (ha)	Combined C
WS-01(UNCONTROLLED)	2161.0		1005.0	3166.0	0.317	0.42
WS-02 (ROOF - CONTROLLED)	763.0		8051.0	8814.0	0.881	0.84
TOTAL	2924.0	0.0	9056.0	11980.0	1.198	0.73



LRL File No. 210628
 Project: New 9 Storey Apartment Building
 Location: 86/100 Beardsbrook Rd
 Date: February 9, 2022
 Designed: Amy Salem
 Drawing Ref.: C.601

Stormwater Management
 Design Sheet

Runoff Equation

$Q = 2.78CIA (L/s)$
 $C =$ Runoff coefficient
 $I =$ Rainfall intensity (mm/hr) = $A / (T_d + C)$
 $A =$ Area (ha)
 $T_d =$ Time of concentration (min)

Pre-development Stormwater Management

$L_{10} = 1735.688 / (T_d + 6.614)^{0.85}$ **a = 1735.688** **b = 0.820** **C = 6.614**

$C =$ 0.50 max of 0.5 as per City of Ottawa
 $I =$ 104.2 mm/hr
 $T_c =$ 10 min
 Total Area = 1.198 ha

Allowable Release Rate = **173.59** L/s

Post-development Stormwater Management

	Total Site Area =	0.1964	ha	VR _c	VR _u	TR _c	TR _u
Controlled	WSP-02 (Road)	0.881	ha	R _c	R _u	0.84	1.00
	WSP-01 (Controlled)	0.881	ha	R _c	R _u	0.84	1.00
Un-controlled	WSP-01	0.317	ha	R _c	R _u	0.42	0.53
	Total Un-controlled =	0.317	ha	VR _c	VR _u	0.42	0.53

Post-development Stormwater Management (Uncontrolled Areas)

100 Year Storm Event:

$L_{10} = 1735.688 / (T_d + 6.614)^{0.85}$ **a = 1735.688** **b = 0.820** **C = 6.614**

Time (min)	Intensity (mm/hr)	Uncontrolled Runoff (L/s)	Controlled Release Rate Constant (L/s)	Total Release Rate (L/s)
10	179.6	62.26	0.00	62.26

Post-development Stormwater Management (Controlled Areas)

100 Year Storm Event:

$L_{10} = 1735.688 / (T_d + 6.614)^{0.85}$ **a = 1735.688** **b = 0.820** **C = 6.614**

Time (min)	Intensity (mm/hr)	Storage Required		Controlled Release Rate Constant (L/s)	Uncontrolled Runoff (L/s)	Total Release Rate (L/s)
		Controlled Runoff (L/s)	Storage Volume (m³)			
10	179.6	0.00	208.18	0.00	0.00	0.00
15	149.2	0.00	223.81	0.00	0.00	0.00
20	129.4	0.00	240.00	0.00	0.00	0.00
25	107.8	0.00	245.84	0.00	0.00	0.00
30	87.5	0.00	247.77	0.00	0.00	0.00
35	68.6	0.00	238.73	0.00	0.00	0.00
40	51.5	0.00	224.40	0.00	0.00	0.00
45	36.8	0.00	212.30	0.00	0.00	0.00
50	24.0	0.00	198.43	0.00	0.00	0.00
55	13.0	0.00	187.02	0.00	0.00	0.00
60	4.8	0.00	152.03	0.00	0.00	0.00
65	0.0	0.00	94.45	0.00	0.00	0.00
70	0.0	0.00	54.92	0.00	0.00	0.00
75	0.0	0.00	32.87	0.00	0.00	0.00
80	0.0	0.00	19.26	0.00	0.00	0.00
85	0.0	0.00	10.89	0.00	0.00	0.00
90	0.0	0.00	6.61	0.00	0.00	0.00
95	0.0	0.00	3.84	0.00	0.00	0.00
100	0.0	0.00	2.14	0.00	0.00	0.00
110	0.0	0.00	0.00	0.00	0.00	0.00
120	0.0	0.00	0.00	0.00	0.00	0.00

Total Storage Required = 245.84 m³

Summary of release Rates and Storage Volumes

Catchment Area	Drainage Area (ha)	100-year Release Rate (L/s)	100-Year Required Storage (m³)
Uncontrolled Areas	0.317	62.26	0
Controlled Areas	0.881	0.00	245.84
TOTAL	1.198	173.59	245.84