Assessment of Adequacy of Public Services Report

6310 Hazeldean Road, Ottawa, ON

Prepared for:

9441-6302 Quebec Inc

Attention: Felix Allaire

Revision 1: December 22, 2023
September 21, 2023

LRL File No.: 220027

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1 INTRODUCTION AND SITE DESCRIPTION

LRL Associates LTD. was retained by Figurr Architects Collective 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.

Figure 1: Arial View of Subject Lands

2 EXISTING SITE AND AVAILABLE SERVICES

The site is currently primarily covered with gravel and some natural landscaping. Based on the topography and site survey information, there is 10 m wide easement along the west property line which includes a ditch collecting and conveying water from the municipal ROW, sloping from the northeast corner of the site to the southeast corner. The existing site topographical survey can be found in **Appendix B**.

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
- 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 along Hazeldean Road and 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 Road and the existing ditch.

3 CONCEPT DEVELOPMENT

The contemplated development will be comprised of two multistorey buildings, Building A and Building B. Both buildings will be accessible via Hazeldean Road. A total of 431 residential apartments are contemplated for the development, including 179 units in Building A and 252 units in Building B**.** There are three levels for parking, an underground level and 2 above ground at levels 1 and 2 of the building.

Amenity spaces and green space will be allocated on third level of Building A. While Building A will be 10 storeys high and Building B will extend to 18 storeys high, with private terraces extending from level 10 to the upper levels. For additional detail of the proposed development, refer to the Architectural Floor Plans prepared by Figurr Architects Collective 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 at least three (3) existing fire hydrants within close proximity to 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, shown 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/unit6
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 calculated from the architectural floor plan drawings completed by Figurr Architects Collective. The contemplated development is anticipated to include **431** residential units which translates to a population of approximately **805** people 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

Population Count			
Unit Type	**Persons Per Unit**	**Number of Units**	**Population**
Studio	1.4	3	4.2
1 Bedroom Apartment	1.4	211	295.4
2 Bedroom Apartment	2.1	168	352.8
3 Bedroom Apartment	3.1	49	151.9
	Total	**431**	**804.3**

The required water supply for the residential units in the proposed development 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 **2.61** L/s,
- Maximum daily demand is **6.52** L/s, and
- Maximum hourly demand is **14.34** L/s.

4.2 Commercial Water Demands

As per the architectural floor plan drawings completed by Figurr Architects Collective, there will be a total of **0.072ha** of proposed amenity space. 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/m^2/day)
A = commercial area (m^2)
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/m^2/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 **0.023** L/s,
- Maximum daily demand is **0.035** L/s, and
- Maximum hourly demand is **0.063** 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 **2.63** L/s,
- Maximum daily demand is **6.55** L/s, and
- Maximum hourly demand is **14.40** 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 A***.

However, at the time of submission, water resources was unable to provide the data required. Once this becomes available to our team at LRL, a revision to this report will be made to confirm available operating pressures and verify if the pressures available for the following scenarios fall within the required pressure range stated in the Table 1 as per City of Ottawa Design Guidelines.

1. Average Dailey Demand: 2.63L/s
2. Maximum Day + Max Fire Flow Demand (Per FUS Calculations): 6.55L/s + 183.30L/s
3. Peak Hourly Demand: 14.40L/s

Fire Flow Demands

The estimated fire flow for the proposed buildings was calculated in accordance with *ISTB-2018-02*. The following parameters were assumed by Figurr Architects Collective:

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

The Fire Underwriters Survey 2020 was used to calculate the fire flow demand for the site. The total effective area considers the two largest adjoining floor areas plus 50% of all floors immediately above them up to a maximum of eight. Buildings A and B although sharing the same parking garage were considered as two separate buildings since the parking garage is separated from the buildings by a fire separation wall.

The Total Effective Area was calculated for each building and to be conservative the building with the larger Total Effective Area was used. This was Building A, located on the west side of the site. It had a total effective floor area of 9,414m^3. Building B was considered in the calculations through consideration of exposure distance.

The maximum estimated fire flow demand was calculated to be **11,000 L/min** for Building A, see **Appendix D** for details.

There are at least three (3) existing fire hydrants near the contemplated buildings that are available to provide the maximum required fire flow demands of **11,000 L/min**. Refer to **Appendix G** for fire hydrant locations.

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

***Table 2:** Fire Protection Summary Table*

	Max. Fire Flow Demand (L/min)	Fire Hydrants(s) within 75m	Fire Hydrant(s) within 150m	Available Combined Fire Flow (L/min)
Contemplated Development	11,000	2	1	(2 x 5678) + (1 x 3785) = 15,141

The total available fire flow from contributing hydrants is equal to **15,141 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.

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. If a sanitary service is proposed to connect to this sewer section, an easement with the neighbouring property will be required. Alternatively, a 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 connection location will be confirmed at the detailed design stage.

The total anticipated post development total flow was calculated to be is **9.0 L/s** as a result of the proposed residential population, commercial use and a small portion of infiltration. The parameters used to determine this were an average daily flow of 280L/person/day, a commercial and institutional flow of 28,000L/ha/day, an infiltration rate of 0.33L/s/ha, a residential peaking factor of 4, a commercial peaking factor of 1 and a total population of 804.3persons.

Refer to **Appendix E** for further information on the calculated sanitary flows.

Based on information available from Geoottawa, 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 7.6% of the maximum existing sewer capacity.

Asset Management at the City of Ottawa has been contacted to provide clarification on the existing conditions of the sanitary infrastructure in Hazeldean and the availability for additional capacity in the range of the expected sanitary effluent of approximately 9.0 L/s. This will need to be confirmed prior to progression of the detailed design.

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 north of the site and a ditch located east of the site within a 10 m-wide easement. There are no municipal storm sewers within the Hazeldean road right-of-way.

In pre-development conditions, the site is generally flat and is generally covered with gravel with some grassed areas at the site boundaries. Stormwater runoff from the subject site generally flows uncontrolled overland to the north of the site towards Hazeldean roadside ditch 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

Based on pre-consultation with the City of Ottawa, the preferred outlet location of the site will be to the ditch the crosses the site at the eastern limit. This ditch is located within a 10m wide existing drainage easement OC626261. The conditions set out in the easement must be respected.

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 **173.79 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, surface storage and subsurface/cistern storage. Due to the high elevation of the proposed ditch outlet, flows from the buildings mechanical system will likely have to be pumped to the ditch.

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

Table 5: Post-Development Estimated Areas & Runoff Coefficients

WATERSHED	C = 0.20	C = 0.70	C = 0.90	Total Area (m^2)	Total Area (ha)	Combined C
WS-01(UNCONTROLLED)	2568.0	0.0	1489.0	4057.0	0.406	0.46
WS-02 (CISTERN - CONTROLLED)	888.0	0.0	7055.0	7943.0	0.794	0.82
TOTAL	**3456.0**	**0.0**	**8544.0**	**12000.0**	**1.200**	**0.70**

Table 6, below, summarizes post-development flow rates. The following storage requirement estimate is based on the Site Plan completed by Figurr Architects. It assumes that most of the roofs and asphalt parking area between buildings one and two will be controlled and the remainder of the site will be uncontrolled. Based on the assumptions, high level post development flow rates and storage requirement calculations were completed.

Table 6: Summary of 100-year Flow Rates and Storage Requirements

Catchment Area	Drainage Area (ha)	100-year Release Rate (L/s)	100-Year Required Storage(m3)	Total Available Storage (m3)
WS-02 (Controlled)	0.794	58.77	259.50	260
WS-01 (Uncontrolled)	0.406	115.02	0.00	0.00
TOTAL	**1.20**	**173.79**	**259.50**	**260.00**

It is anticipated that approximately **260.00 m^3** of storage will be required on site to attenuate flows to the established release rate of **173.79 L/s** in the 100-year storm. The required volume is a high-level approximation. At the detailed design stage, grading will be completed an a more accurate required volume will be calculated. Refer to ***Appendix F for*** storage calculations. The required storage can be achieved with underground storage within the underground parking area and roof storage.

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 EROSION & SEDIMENT CONTROL

During construction, Best management practices (BMPs) shall be undertaken to Control Erosion and Sediment. These BMPs aim to minimize soil erosion, sedimentation, and other negative

impacts on water quality and natural habitats. Some examples of BMPs for erosion and sediment control are;

- Controlling mud tracking: By means of installing, maintaining, and using stabilized construction entrances and exits at all access locations. Mud matts shall be maintained and cleaned on a regular basis.
- Installing inlet sediment control devices: To prevent surface erosion from entering any storm sewer system during construction, filter bags will be placed under grates of nearby catch basins and structures.
- Establishing vegetation: Vegetation, such as grasses and trees, can help stabilize soil and prevent erosion. In areas where vegetation is not present, consider planting native species that are well adapted to the local soil and climate conditions.
- Installing silt fences to trap sediment and prevent it from entering nearby waterways. To be erected along the perimeter of the site where runoff has the potential of leaving the site.
- Manage construction activities: Proper management of construction activities is essential to minimize soil disturbance and sedimentation. This may include controlling runoff from disturbed areas, using proper excavation techniques, and minimizing the amount of time that soil is exposed.
- Implement good housekeeping practices: This includes properly managing and disposing of waste materials, regularly maintaining equipment to prevent leaks and spills, and keeping work areas clean and free of debris. It's important to note that the specific BMPs used for erosion and sediment control may vary depending on the site conditions and project requirements. Therefore, it's important to ensure that the appropriate BMPs are selected and implemented for this site.

A Light Duty Straw Bail Barrier is to be installed downstream of the development's storm outlet within the Ditch as per OPSD 219.100.

8 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 Site Plan completed by Figurr Architects Collective, 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 Road.
  - Domestic demands from the proposed concept subdivision are expected to be in the range of **2.63 L/s** for the Average daily demand, **6.55 L/s** for the maximum daily and **14.40 L/s** for maximum hourly.
  - The maximum required fire flow was calculated at **11,000 L/min** using the FUS 2020 method.
  - There are at least three (3) existing fire hydrants available to service the proposed development. They will provide a combined fire flow of **15,141 L/min** to the site.
- **Sanitary**:

- The post development total sanitary effluent was calculated to be is **9.00 L/s** considering proposed residential & commercial population and a small portion of infiltration.
- It is anticipated to service the contemplated development via a 150 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 7.6% 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 **173.79 L/s** and accommodate **260.00 m^3** 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 site 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 refined and confirmed.

Prepared by:

LRL Associates Ltd.

Tamara Harb, EIT
Civil Designer

Virginia Johnson, P.Eng.
Civil Engineer

APPENDIX A

Correspondence/ Communication

Tamara Harb

From: Brault, Ryan <ryan.brault@ottawa.ca>
Sent: December 19, 2023 11:36 AM
To: Tamara Harb
Cc: Virginia Johnson; Schaeffer, Gabrielle; Stern, Lisa; Armstrong, Justin
Subject: RE: LRL220027_6310 Hazeldean Road_Request for Boundary Conditions

Hi Tamara,

Thank you for reaching out – I confirm receipt of the additional information (received Friday). I will be doing my review of the information this afternoon, unless I have follow up questions for you, I will then forward the request to our water services team for them to provide the boundary conditions. They have a 10-business day turn around on requests. I will ask for an expedited analysis, however, cannot guarantee that they will be able to provide BCs before end of week. I will keep you updated with any information I receive.

Please let me know if you have any questions or concerns.

Regards,

Ryan Brault, M.Eng., P.Eng
Project Manager - Infrastructure Approvals

City of Ottawa
Development Review - West Branch
Planning, Real Estate and Economic Development Department
110 Laurier Ave West, 4th Floor East;
Ottawa ON K1P 1J1
Tel: 613-580-2424 x 32540

From: Tamara Harb <tharb@lrl.ca>
Sent: December 19, 2023 11:03 AM
To: Brault, Ryan <ryan.brault@ottawa.ca>
Cc: Virginia Johnson <vjohnson@lrl.ca>; Schaeffer, Gabrielle <gabrielle.schaeffer@Ottawa.ca>; Stern, Lisa <lisa.stern@ottawa.ca>; Armstrong, Justin <justin.armstrong@ottawa.ca>
Subject: FW: LRL220027_6310 Hazeldean Road_Request for Boundary Conditions

Good morning Ryan,

I wanted to follow up on my previous email. Do you require any other information for your review? I understand this is short notice, but we're pushing to submit this before the holidays. Could we expect to receive boundary conditions before end of the week?

Thank you,

Tamara Harb, EIT
Civil EIT/ Designer

LRL Engineering | lrl.ca
Cell: (613)915-0350 | tharb@lrl.ca

From: Tamara Harb
Sent: Friday, December 15, 2023 10:30 AM
To: Brault, Ryan <ryan.brault@ottawa.ca>
Cc: Virginia Johnson <vjohnson@lrl.ca>; gabrielle.schaeffer@ottawa.ca; lisa.stern@ottawa.ca; Armstrong, Justin <Justin.Armstrong@ottawa.ca>
Subject: RE: LRL220027_6310 Hazeldean Road_Request for Boundary Conditions

Good morning,

I've attached the architectural floor plans for your reference and below is a breakdown of the floor areas of the buildings.

The Fire Underwriters Survey 2020 was used to calculate the fire flow demand for the site. The total effective area considers the two largest adjoining floor areas plus 50% of all floors immediately above them up to a maximum of eight. Buildings A and B although sharing the same parking garage were considered as two separate buildings since the parking garage is separated from the buildings by a fire separation wall. The Total Effective Area was calculated for each building and to be conservative the building with the larger Total Effective Area was used. This was Building A. It had a total effective floor area of 9,414m^3. Building B was considered in the calculations through consideration of exposure distance.

Floor	Area, Building 01 **sq. m**	Area, Building 02 (tower) **sq. m**
P1 (shared)	9479	
1	1823	1309
2	1830	1312
3	2587 **+ 2678 outdoor terrace (amenity)**	1400
4	2585	1230
5	2320	1230
6	2320	1230
7	1281	1230
8	1281	782
9	1281	750
10		750
11		750
12		750
13		750
14		750

15		750
16		750
17		750
18		750
19		750
20		750
21		750
22		750
23		750
24		750
25		750

Hope this helps you with your review. Please let me know if you have any questions.

Thank you,

Tamara Harb, EIT
Civil EIT/ Designer
LRL Engineering | lrl.ca
Cell: (613)915-0350 | tharb@lrl.ca

From: Brault, Ryan <ryan.brault@ottawa.ca>
Sent: Wednesday, December 13, 2023 2:56 PM
To: Tamara Harb <tharb@lrl.ca>
Cc: Schaeffer, Gabrielle <gabrielle.schaeffer@Ottawa.ca>; Stern, Lisa <lisa.stern@ottawa.ca>; Armstrong, Justin <justin.armstrong@ottawa.ca>
Subject: RE: LRL220027_6310 Hazeldean Road_Request for Boundary Conditions

Good Afternoon Tamara,

Are you able to provide additional information/plans showing the relevant details to be reviewed with your calculation sheets? This will assist in our review prior to sending the request to our Water Services Department.

Please let me know if you have any questions or concerns.

Regards,

Ryan Brault, M.Eng., P.Eng
Project Manager - Infrastructure Approvals

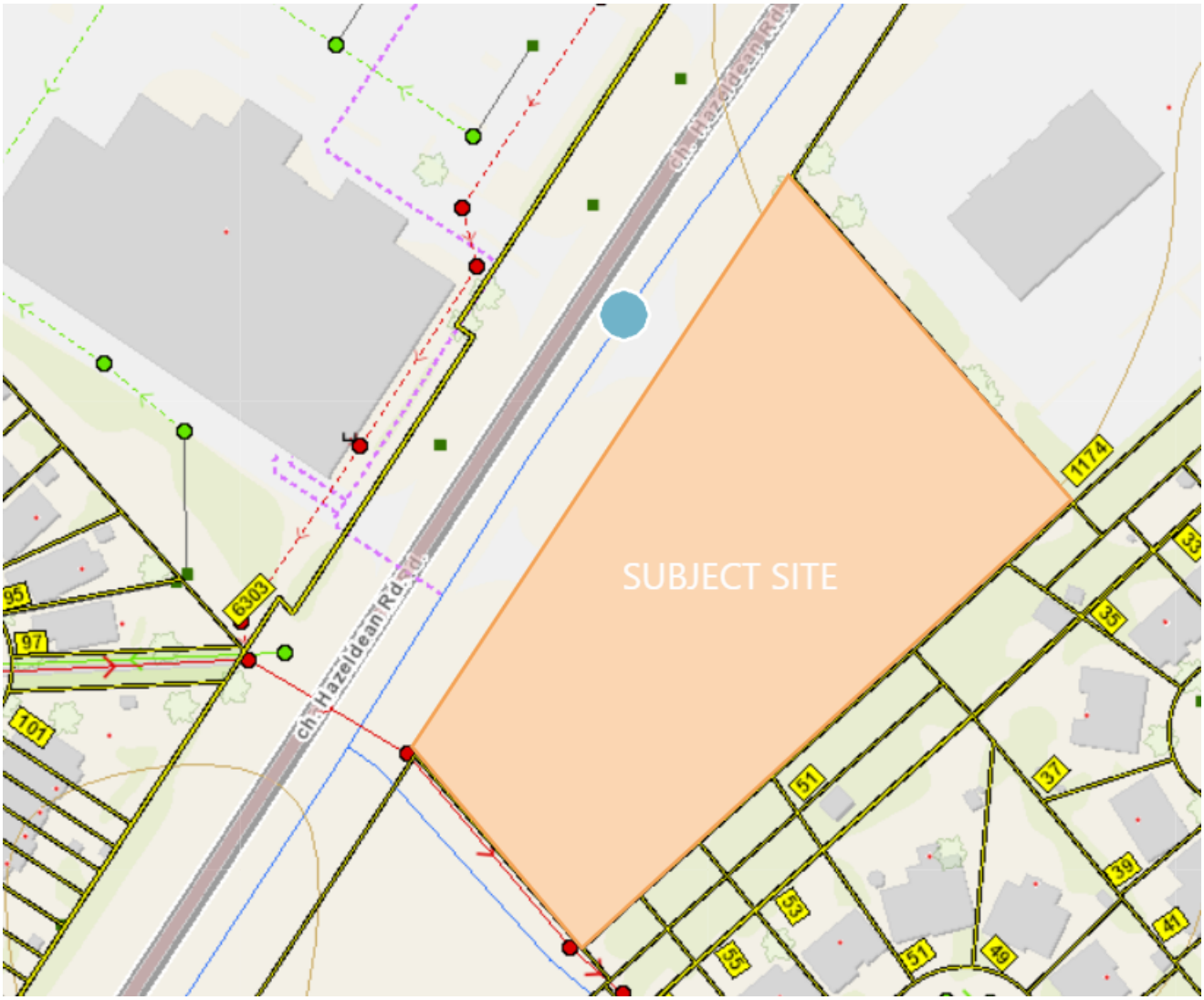
City of Ottawa
Development Review - West Branch
Planning, Real Estate and Economic Development Department
110 Laurier Ave West, 4th Floor East;
Ottawa ON K1P 1J1

Tel: 613-580-2424 x 32540

From: Tamara Harb <tharb@lrl.ca>
Sent: December 11, 2023 12:28 PM
To: Armstrong, Justin <justin.armstrong@ottawa.ca>
Cc: Virginia Johnson <vjohnson@lrl.ca>
Subject: LRL220027_6310 Hazeldean Road_Request for Boundary Conditions

Good afternoon ,

I'd like to request boundary conditions for the site located at 6310 Hazeldean Road. Could you please provide the boundary conditions at the connection point shown below in blue?



The following table shows the expected water and fire demands.

	Demand (UPDATED) L/s
Avg. Daily	2.63
Max Day + FUS	6.55 + 183.3
Max Hour	14.40

I have also attached our water and fire demand calculation sheets for your reference. Please let me know if you have any questions.

Thank you,

Tamara Harb, EIT
Civil EIT/ Designer
LRL Engineering | lrl.ca
Cell: (613)915-0350 | tharb@lrl.ca

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Tamara Harb

From: Tamara Harb
Sent: December 22, 2023 1:00 PM
To: Brault, Ryan
Cc: Virginia Johnson
Subject: LRL220027_6310 Hazeldean Road_Sanitary Sewer Capacity

Good afternoon Ryan,

Could you confirm with the Asset Management Group to verify that the sanitary downstream capacity can take the 9 L/s for the proposed development at 6310 Hazeldean Road?

Please let me know if you require any further information.

Thank you,

Tamara Harb, EIT
Civil EIT/ Designer
LRL Engineering | lrl.ca
Cell: (613)915-0350 | tharb@lrl.ca

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
SIB	DENOTES	STANDARD IRON BAR
SSIB	DENOTES	SHORT STANDARD IRON BAR
RPL	DENOTES	ROCK PLUG
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 GEOID 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

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:

M:\SURVEY-DATA\S2018\18-4039 MPCE (6310 HAZELDEAN ROAD)\D18-4039.DWG

APPENDIX C

Site Plan and Architectural Floor Plans

PROJECT SUMMARY

UNIT TYPE	COUNT	RATIO
1B	111	25.8%
1B + D	100	23.2%
2B	109	25.3%
2B + D	59	13.7%
3B	49	11.4%
STUDIO	3	0.7%

TOTAL UNITS: 431

PARKING TYPE	COUNT
2.4m X 4.6m SMALL	76
BARRIER FREE PARKING	6
REGULAR PARKING	393

TOTAL PARKING SPOTS: 475

PARKING TYPE	COUNT	RATIO
BIKE PARKING	395	0.92

TOTAL BIKE PARKING SPOTS: 395

PARKING TO UNIT RATIO
1.10

UNIT STATS - BLDG_1	
UNIT TYPE	COUNT
1B	30
1B + D	66
2B	50
2B + D	14
3B	16
STUDIO	3

TOTAL UNITS: 179

UNIT STATS - BLDG_2	
UNIT TYPE	COUNT
1B	81
1B + D	34
2B	59
2B + D	45
3B	33

TOTAL UNITS: 252

CATEGORY	COUNT	AREA
P1 PARKING		
EXCLUSIONS	13	2933 ft²
GARBAGE	2	2894 ft²
PARKING	1	92789 ft²
RES. COMMONS	7	1417 ft²
Level 1		
AMENITY	2	1889 ft²
EXCLUSIONS	21	3737 ft²
PARKING	1	32726 ft²
RENTABLE	24	20066 ft²
RES. COMMONS	13	6514 ft²
Level 2		
AMENITY	1	930 ft²
EXCLUSIONS	15	2108 ft²
RENTABLE	29	24409 ft²
RES. COMMONS	4	3310 ft²
Level 3		
AMENITY	5	3760 ft²
EXCLUSIONS	13	1497 ft²
EXT. COMMONS	1	28894 ft²
RENTABLE	40	30626 ft²
RES. COMMONS	4	2880 ft²
Level 4		
AMENITY	1	728 ft²
EXCLUSIONS	11	1422 ft²
RENTABLE	39	30247 ft²
RES. COMMONS	4	2565 ft²
Level 5		
EXCLUSIONS	14	1642 ft²
RENTABLE	38	29829 ft²
RES. COMMONS	4	2520 ft²
Level 6		
EXCLUSIONS	14	1644 ft²
RENTABLE	38	29845 ft²
RES. COMMONS	4	2524 ft²
Level 7-B2		
EXCLUSIONS	4	786 ft²
RENTABLE	13	10520 ft²
RES. COMMONS	2	720 ft²
Level 7-B1		
EXCLUSIONS	6	494 ft²
RENTABLE	16	11277 ft²

CATEGORY	COUNT	AREA
RES. COMMONS	2	855 ft²
Level 8-B1		
EXCLUSIONS	2	180 ft²
RENTABLE	16	11185 ft²
RES. COMMONS	2	813 ft²
Level 8-B2		
EXCLUSIONS	3	620 ft²
RENTABLE	9	6648 ft²
RES. COMMONS	2	445 ft²
Level 9-B1		
EXCLUSIONS	2	180 ft²
RENTABLE	16	11194 ft²
RES. COMMONS	1	812 ft²
Level 9-B2		
EXCLUSIONS	3	620 ft²
RENTABLE	9	6557 ft²
RES. COMMONS	2	445 ft²
Level 10-B2		
EXCLUSIONS	4	652 ft²
RENTABLE	9	6519 ft²
RES. COMMONS	2	445 ft²
Level 10-B1		
EXCLUSIONS	8	2906 ft²
Level 11-B2		
EXCLUSIONS	1	553 ft²
RENTABLE	9	6578 ft²
RES. COMMONS	1	419 ft²
Level 12-B2		
EXCLUSIONS	4	642 ft²
RENTABLE	9	6578 ft²
RES. COMMONS	2	445 ft²
Level 13-B2		
EXCLUSIONS	3	611 ft²
RENTABLE	9	6578 ft²
RES. COMMONS	1	419 ft²
Level 14-B2		
EXCLUSIONS	3	611 ft²
RENTABLE	9	6578 ft²
RES. COMMONS	1	419 ft²
Level 15-B2		
EXCLUSIONS	3	611 ft²
RENTABLE	9	6578 ft²
RES. COMMONS	1	419 ft²

CATEGORY	COUNT	AREA
Level 16-B2		
EXCLUSIONS	3	611 ft²
RENTABLE	9	6578 ft²
RES. COMMONS	1	419 ft²
Level 17-B2		
EXCLUSIONS	3	611 ft²
RENTABLE	9	6578 ft²
RES. COMMONS	1	419 ft²
Level 18-B2		
EXCLUSIONS	2	568 ft²
RENTABLE	9	6701 ft²
RES. COMMONS	1	26 ft²
Level 19-B2		
EXCLUSIONS	3	936 ft²
RENTABLE	9	6685 ft²
Level 20-B2		
EXCLUSIONS	1	576 ft²
RENTABLE	9	6733 ft²
Level 21-B2		
EXCLUSIONS	1	576 ft²
RENTABLE	9	6733 ft²
Level 22-B2		
EXCLUSIONS	1	576 ft²
RENTABLE	9	6732 ft²
Level 23-B2		
EXCLUSIONS	1	576 ft²
RENTABLE	9	6732 ft²
Level 24-B2		
EXCLUSIONS	1	576 ft²
RENTABLE	9	6732 ft²
Level 25-B2		
EXCLUSIONS	1	576 ft²
RENTABLE	9	6737 ft²
TOTAL SQ.FT: 671		553239 ft²

UNIT STATS

BLDG 1 UNITS (TYPICAL FLOORS)

ROOM #	UNIT TYPE	AREA
Level 1		
B1-101	3B	1088 ft²
B1-102	1B + D	679 ft²
B1-103	2B + D	1025 ft²
B1-104	3B	1254 ft²
B1-105	2B	872 ft²
B1-106	1B + D	694 ft²
B1-107	1B + D	706 ft²
B1-108	1B + D	719 ft²
B1-109	3B	1067 ft²
B1-110	2B	932 ft²
B1-111	1B + D	761 ft²
B1-112	1B + D	761 ft²
B1-113	3B	1318 ft²
Level 2		
B1-201	3B	1287 ft²
B1-202	1B + D	682 ft²
B1-203	2B + D	974 ft²
B1-204	2B + D	1183 ft²
B1-205	2B	920 ft²
B1-206	1B + D	747 ft²
B1-207	1B + D	759 ft²
B1-208	2B	772 ft²
B1-209	1B + D	698 ft²
B1-210	1B + D	635 ft²
B1-211	1B + D	683 ft²
B1-212	1B + D	810 ft²
B1-213	1B + D	811 ft²
B1-214	1B + D	768 ft²
B1-216	2B	636 ft²
B1-217	2B	1025 ft²
Level 3		
B1-301	2B	916 ft²
B1-302	1B	593 ft²
B1-303	2B	919 ft²
B1-304	2B	919 ft²
B1-305	2B	892 ft²
B1-306	1B + D	636 ft²
B1-307	1B + D	637 ft²
B1-308	1B + D	646 ft²
B1-309	1B + D	698 ft²
B1-310	1B + D	638 ft²
B1-311	1B + D	636 ft²
B1-312	1B + D	636 ft²
B1-313	1B + D	637 ft²
B1-314	1B + D	637 ft²
B1-315	2B + D	985 ft²
B1-316	2B + D	986 ft²
B1-317	2B	896 ft²
B1-318	1B	635 ft²
B1-319	1B + D	668 ft²
B1-320	2B	706 ft²
B1-321	1B + D	611 ft²
B1-322	1B + D	602 ft²
B1-323	1B + D	602 ft²
B1-324	3B	1034 ft²
B1-325	1B + D	611 ft²
B1-326	2B	788 ft²
Level 4		
B1-401	3B	1101 ft²
B1-402	2B + D	975 ft²
B1-403	2B	840 ft²
B1-404	1B	584 ft²
B1-405	1B	585 ft²
B1-406	1B	593 ft²
B1-407	1B + D	697 ft²
B1-408	1B + D	635 ft²
B1-409	1B + D	637 ft²
B1-410	1B + D	636 ft²
B1-411	1B + D	637 ft²
B1-412	1B + D	638 ft²
B1-413	2B + D	987 ft²
B1-414	3B	1090 ft²
B1-415	3B	1247 ft²
B1-416	2B	733 ft²
B1-417	2B	706 ft²
B1-418	1B	611 ft²
B1-419	1B	602 ft²
B1-420	1B	602 ft²
B1-421	2B	772 ft²
B1-422	2B	781 ft²
B1-423	1B + D	643 ft²
B1-424	1B + D	654 ft²
B1-425	1B + D	812 ft²
B1-426	3B	975 ft²
Level 5		

BLDG 1 UNITS (TYPICAL FLOORS)

ROOM #	UNIT TYPE	AREA
B1-501	2B	1113 ft²
B1-502	2B	977 ft²
B1-503	1B + D	838 ft²
B1-504	1B	587 ft²
B1-505	1B	585 ft²
B1-506	1B	594 ft²
B1-507	2B	891 ft²
B1-508	2B	884 ft²
B1-509	1B + D	586 ft²
B1-510	1B + D	586 ft²
B1-511	1B + D	586 ft²
B1-512	2B	885 ft²
B1-513	2B	884 ft²
B1-514	2B + D	1079 ft²
B1-515	2B	730 ft²
B1-516	2B	706 ft²
B1-517	1B + D	611 ft²
B1-518	1B + D	602 ft²
B1-519	1B + D	602 ft²
B1-520	2B	772 ft²
B1-521	2B	781 ft²
B1-522	1B + D	643 ft²
B1-523	1B + D	655 ft²
B1-524	2B + D	1139 ft²
B1-525	2B + D	1027 ft²
Level 7-B1		
B1-701	1B + D	673 ft²
B1-702	3B	1190 ft²
B1-703	1B	586 ft²
B1-704	1B	585 ft²
B1-705	1B	586 ft²
B1-706	1B	585 ft²
B1-707	2B	885 ft²
B1-708	2B	884 ft²
B1-709	3B	1083 ft²
B1-710	2B	728 ft²
B1-711	2B	706 ft²
B1-712	1B	611 ft²
B1-713	1B	602 ft²
B1-714	1B	602 ft²
B1-715	STUDIO	516 ft²
B1-716	STUDIO	454 ft²

BLDG 2 UNITS (TYPICAL FLOORS)

ROOM #	UNIT TYPE	AREA
Level 1		
B2-101	1B + D	581 ft²
B2-102	1B	584 ft²
B2-103	1B	596 ft²
B2-104	1B + D	634 ft²
B2-105	1B + D	635 ft²
B2-106	1B + D	637 ft²
B2-107	1B + D	637 ft²
B2-108	2B	962 ft²
B2-109	2B + D	987 ft²
B2-110	2B	921 ft²
B2-111	3B	1016 ft²
Level 2		
B2-201	3B	1268 ft²
B2-202	2B	743 ft²
B2-203	1B + D	640 ft²
B2-204	2B + D	1047 ft²
B2-205	2B	960 ft²
B2-206	3B	1228 ft²
B2-207	2B	955 ft²
B2-208	1B	540 ft²
B2-209	1B	536 ft²
B2-210	1B	575 ft²
B2-211	1B	578 ft²
B2-212	2B	876 ft²
B2-213	2B	1074 ft²
Level 3		
B2-301	3B	1267 ft²
B2-302	2B	741 ft²
B2-303	1B + D	641 ft²
B2-304	2B + D	1047 ft²
B2-305	1B + D	737 ft²
B2-306	3B	1076 ft²
B2-307	2B + D	940 ft²
B2-308	2B	844 ft²
B2-309	1B	527 ft²
B2-310	1B	537 ft²
B2-311	1B	574 ft²
B2-312	1B	572 ft²
B2-313	2B	871 ft²
B2-314	2B	1085 ft²
Level 4		
B2-401	3B	1151 ft²
B2-402	2B	867 ft²
B2-403	2B + D	1048 ft²
B2-404	1B + D	751 ft²
B2-405	3B	1066 ft²
B2-406	2B	942 ft²
B2-407	2B	882 ft²
B2-408	1B	563 ft²
B2-409	1B	575 ft²
B2-410	1B	613 ft²
B2-411	1B	615 ft²
B2-412	1B	579 ft²
B2-413	2B	820 ft²
Level 8-B2		
B2-801	3B	934 ft²
B2-802	1B	533 ft²
B2-803	1B + D	623 ft²
B2-804	3B	938 ft²
B2-805	2B + D	927 ft²
B2-806	2B	742 ft²
B2-807	1B	563 ft²
B2-808	1B	574 ft²
B2-809	2B + D	813 ft²

AREA

- EXCLUSIONS
- GARBAGE
- PARKING
- RES. COMMONS

PARKING TYPE	COUNT

P1 PARKING

2.4m X 4.6m SMALL	41
BARRIER FREE PARKING	2
REGULAR PARKING	228

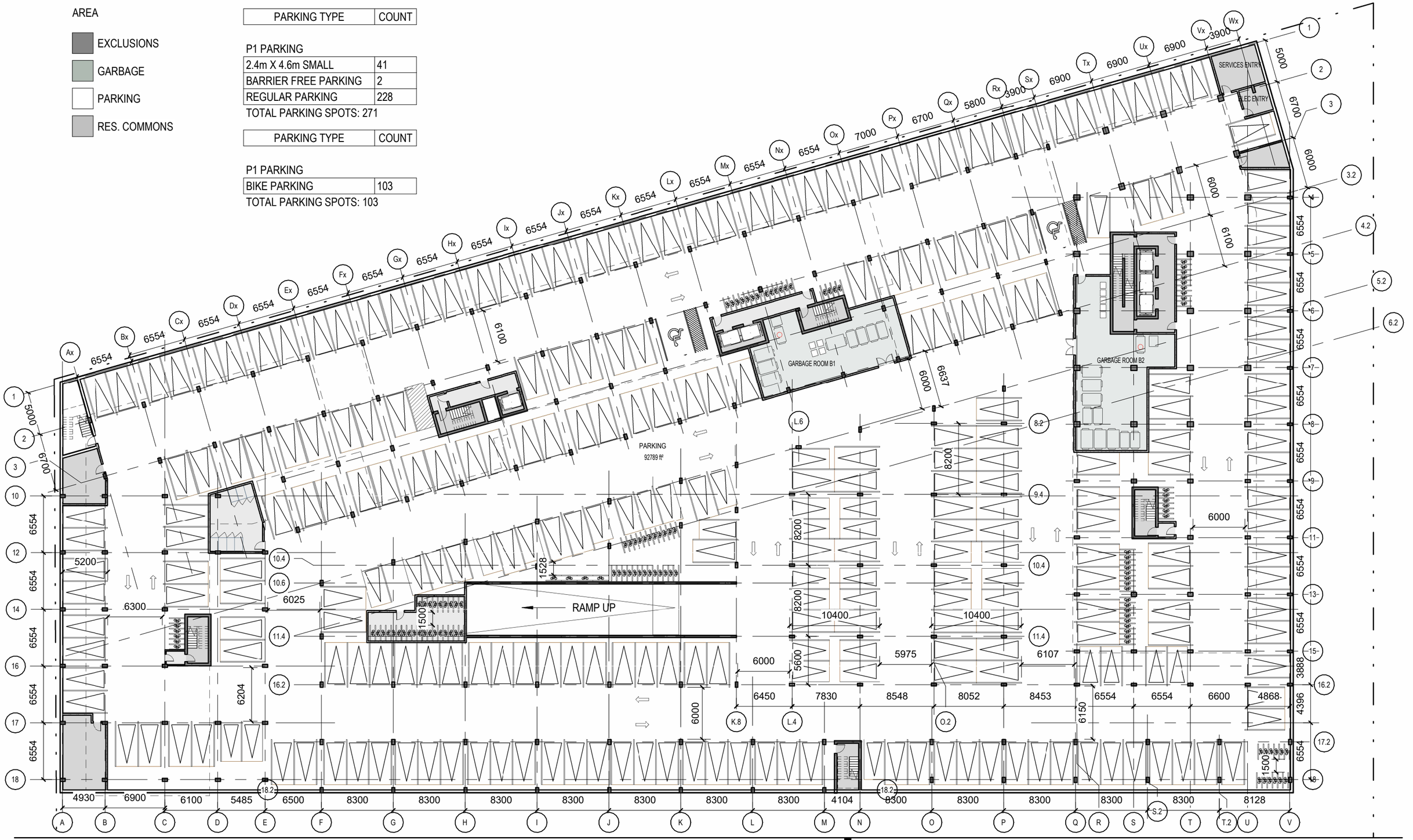
TOTAL PARKING SPOTS: 271

PARKING TYPE	COUNT

P1 PARKING

BIKE PARKING	103

TOTAL PARKING SPOTS: 103



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SK-00

6310 HAZELDEAN ROAD - SPC REZONE

Project # 2311

2023-11-29 **P1 PARKING PLAN**

AREA

- AMENITY
- EXCLUSIONS
- PARKING
- RENTABLE
- RES. COMMONS

UNITS-LEVEL1-BLDG_1	
UNIT TYPE	COUNT
1B + D	6
2B	2
2B + D	1
3B	4
TOTAL UNITS: 13	

UNITS-LEVEL1-BLDG_2	
UNIT TYPE	COUNT
1B	2
1B + D	5
2B	2
2B + D	1
3B	1
TOTAL UNITS: 11	

PARKING TYPE	COUNT

Level 1

BIKE PARKING	115

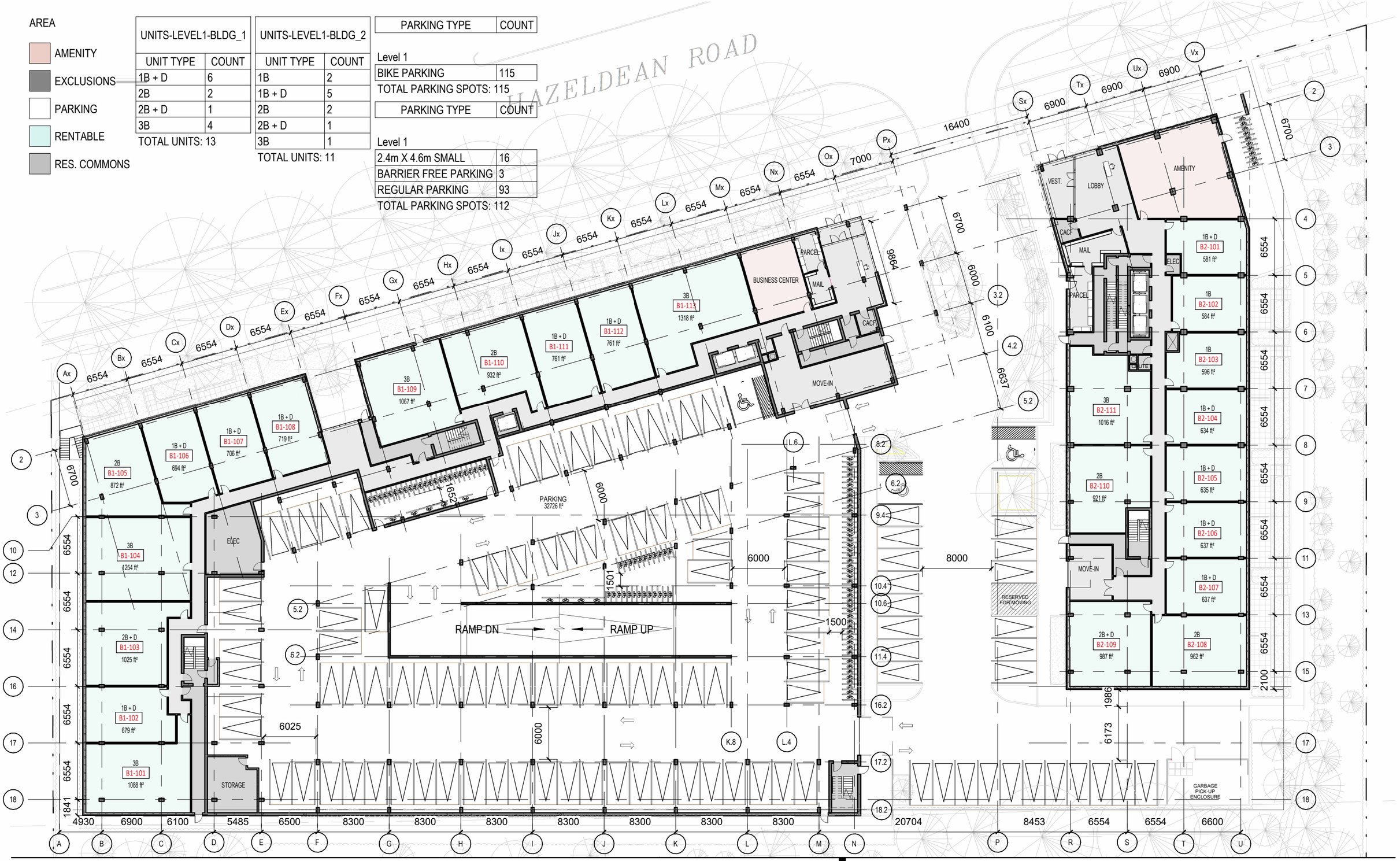
TOTAL PARKING SPOTS: 115

PARKING TYPE	COUNT

Level 1

2.4m X 4.6m SMALL	16
BARRIER FREE PARKING	3
REGULAR PARKING	93

TOTAL PARKING SPOTS: 112



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SK-01

6310 HAZELDEAN ROAD - SPC REZONE

Project # 2311

2023-11-29 **GROUND FLOOR PLAN**

AREA

- AMENITY
- EXCLUSIONS
- RENTABLE
- RES. COMMONS

UNITS-LEVEL2-BLDG_1	
UNIT TYPE	COUNT
Level 2	
1B + D	9
2B	4
2B + D	2
3B	1

TOTAL UNITS: 16

UNITS-LEVEL2-BLDG_2	
UNIT TYPE	COUNT
Level 2	
1B	4
1B + D	1
2B	5
2B + D	1
3B	2

TOTAL UNITS: 13

PARKING TYPE	COUNT
Level 2P	
2.4m X 4.6m SMALL	8
BARRIER FREE PARKING	1
REGULAR PARKING	72

TOTAL PARKING SPOTS: 81

PARKING TYPE	COUNT
Level 2P	
BIKE PARKING	61

TOTAL PARKING SPOTS: 61

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SK-02

6310 HAZELDEAN ROAD - SPC REZONE

Project # 2311

2023-11-29 **LEVEL 2 FLOOR PLAN**

AREA

- AMENITY
- EXCLUSIONS
- EXT. COMMONS
- RENTABLE
- RES. COMMONS

UNITS-LEVEL3-BLDG_1	
UNIT TYPE	COUNT
Level 3	
1B	2
1B + D	14
2B	7
2B + D	2
3B	1
TOTAL UNITS: 26	

UNITS-LEVEL3-BLDG_2	
UNIT TYPE	COUNT
Level 3	
1B	4
1B + D	2
2B	4
2B + D	2
3B	2
TOTAL UNITS: 14	

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SK-03

6310 HAZELDEAN ROAD - SPC REZONE

Project # 2311

2023-11-29 **FLOOR PLAN - LEVEL 3**

AREA

- AMENITY
- EXCLUSIONS
- RENTABLE
- RES. COMMONS

UNITS-LEVEL4-BLDG_1	
UNIT TYPE	COUNT
Level 4	
1B	6
1B + D	9
2B	5
2B + D	2
3B	4
TOTAL UNITS: 26	

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SK-04-B1

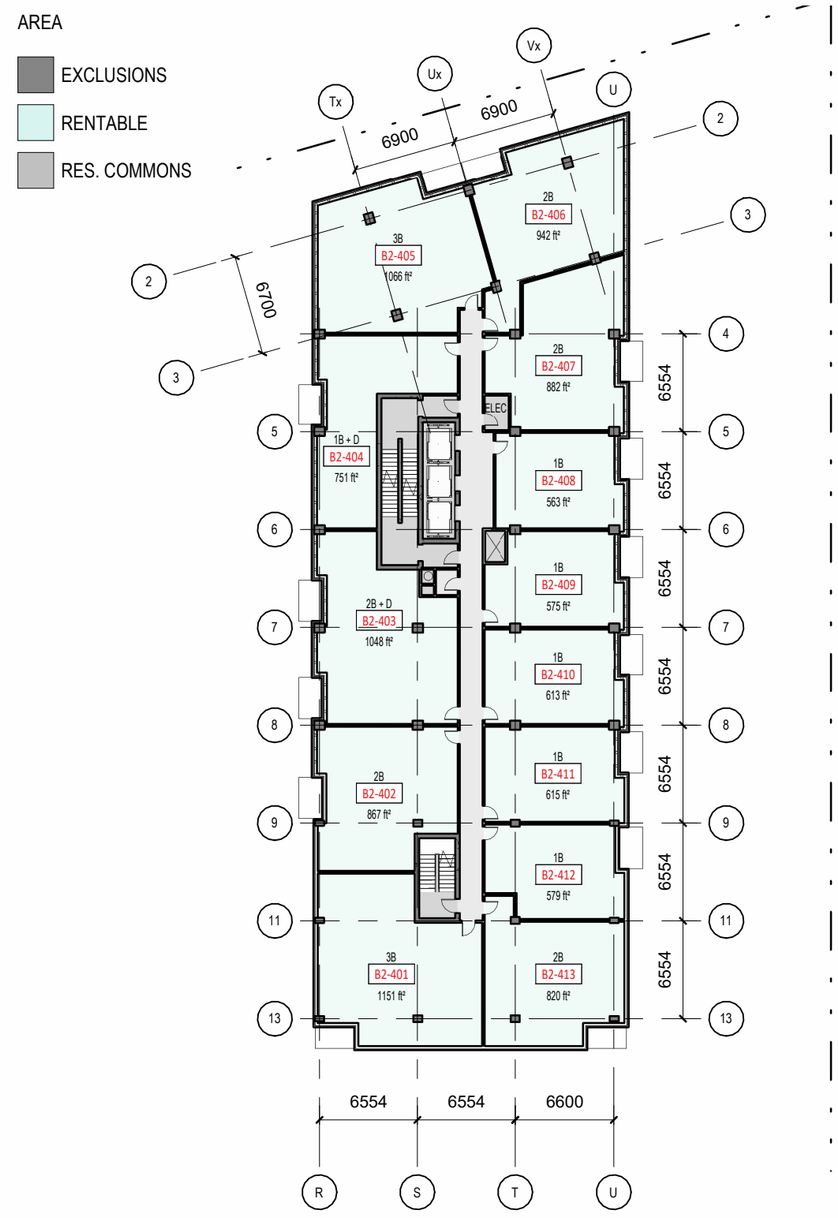
6310 HAZELDEAN ROAD - SPC REZONE

Project # 2311

2023-11-29 **FLOOR PLAN - LEVEL 4 B1 ONLY**

UNITS-LEVEL 4-7-BLDG_2	
UNIT TYPE	COUNT
Level 4	
1B	5
1B + D	1
2B	4
2B + D	1
3B	2
Level 5	
1B	6
1B + D	1
2B	4
3B	2
Level 6	
1B	2
1B + D	4
2B	3
2B + D	2
3B	2
Level 7-B2	
1B	4
1B + D	2
2B	2
2B + D	2
3B	3

TOTAL UNITS: 52



UNITS-LEVEL5-6-BLDG_1	
UNIT TYPE	COUNT
Level 5	
1B	3
1B + D	9
2B	10
2B + D	3
Level 6	
1B	3
1B + D	9
2B	9
2B + D	3
3B	1

TOTAL UNITS: 50

AREA

EXCLUSIONS

RENTABLE

RES. COMMONS

figurr collectif d'architectes

SK-05-B1

6310 HAZELDEAN ROAD - SPC REZONE

Project # 2311

2023-11-29 **FLOOR PLAN - LEVELS 5-6 B1 ONLY**

UNITS-LEVEL7-8-9-BLDG_1	
UNIT TYPE	COUNT
Level 7-B1	
1B	7
1B + D	1
2B	4
3B	2
STUDIO	2
Level 8-B1	
1B	1
1B + D	8
2B	5
2B + D	1
3B	1

UNITS-LEVEL7-8-9-BLDG_1	
UNIT TYPE	COUNT
Level 9-B1	
1B	8
1B + D	1
2B	4
3B	2
STUDIO	1

TOTAL UNITS: 48

AREA

EXCLUSIONS

RENTABLE

RES. COMMONS

UNITS-LEVEL10-25-BLDG_2	
UNIT TYPE	COUNT
Level 8-B2	
1B	3
1B + D	1
2B	1
2B + D	2
3B	2
Level 9-B2	
1B	3
1B + D	1
2B	2
2B + D	2
3B	1
Level 10-B2	
1B	3
1B + D	1
2B	2
2B + D	2
3B	1
Level 11-B2	
1B	3
1B + D	1
2B	2
2B + D	2
3B	1
Level 12-B2	
1B	3
1B + D	1
2B	2
2B + D	2
3B	1

UNITS-LEVEL10-25-BLDG_2	
UNIT TYPE	COUNT
Level 13-B2	
1B	3
1B + D	1
2B	2
2B + D	2
3B	1
Level 14-B2	
1B	3
1B + D	1
2B	2
2B + D	2
3B	1
Level 15-B2	
1B	3
1B + D	1
2B	2
2B + D	2
3B	1
Level 16-B2	
1B	3
1B + D	1
2B	2
2B + D	2
3B	1
Level 17-B2	
1B	3
1B + D	1
2B	2
2B + D	2
3B	1

UNITS-LEVEL10-25-BLDG_2	
UNIT TYPE	COUNT
Level 18-B2	
1B	3
1B + D	1
2B	2
2B + D	2
3B	1
Level 19-B2	
1B	3
1B + D	1
2B	2
2B + D	2
3B	1
Level 20-B2	
1B	3
1B + D	1
2B	2
2B + D	2
3B	1
Level 21-B2	
1B	3
1B + D	1
2B	2
2B + D	2
3B	1
Level 22-B2	
1B	3
1B + D	1
2B	2
2B + D	2
3B	1

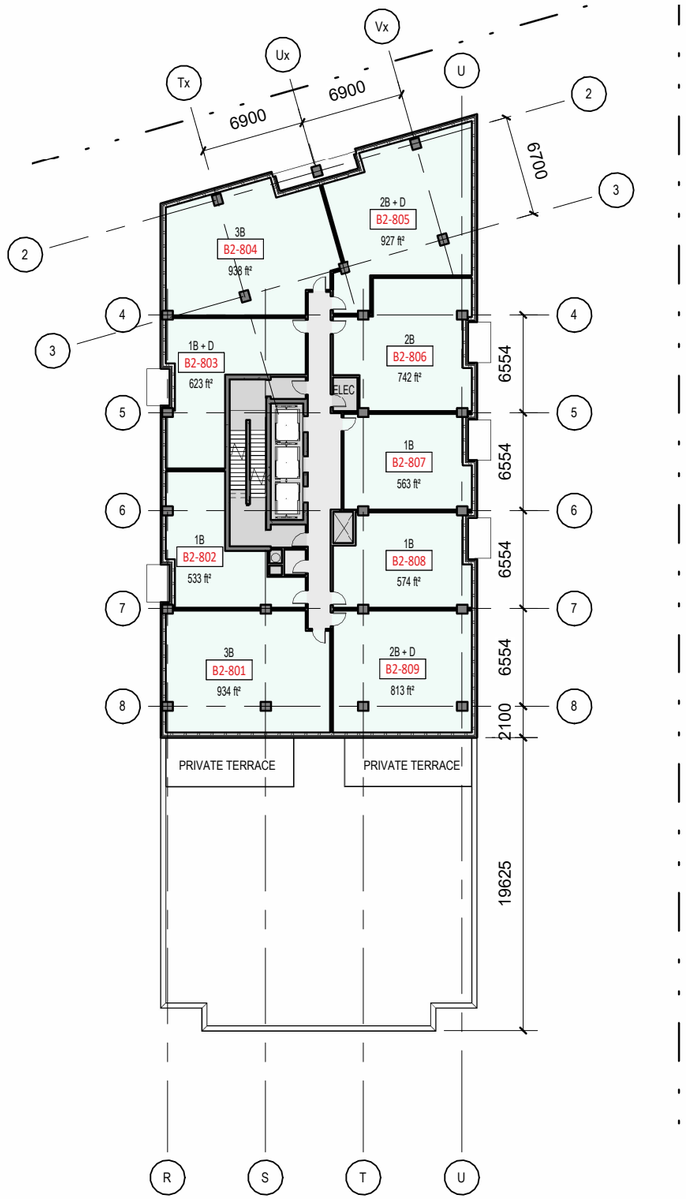
UNITS-LEVEL10-25-BLDG_2	
UNIT TYPE	COUNT
Level 23-B2	
1B	3
1B + D	1
2B	2
2B + D	2
3B	1
Level 24-B2	
1B	3
1B + D	1
2B	2
2B + D	2
3B	1
Level 25-B2	
1B	3
1B + D	1
2B	2
2B + D	2
3B	1
TOTAL UNITS: 162	

AREA

EXCLUSIONS

RENTABLE

RES. COMMONS

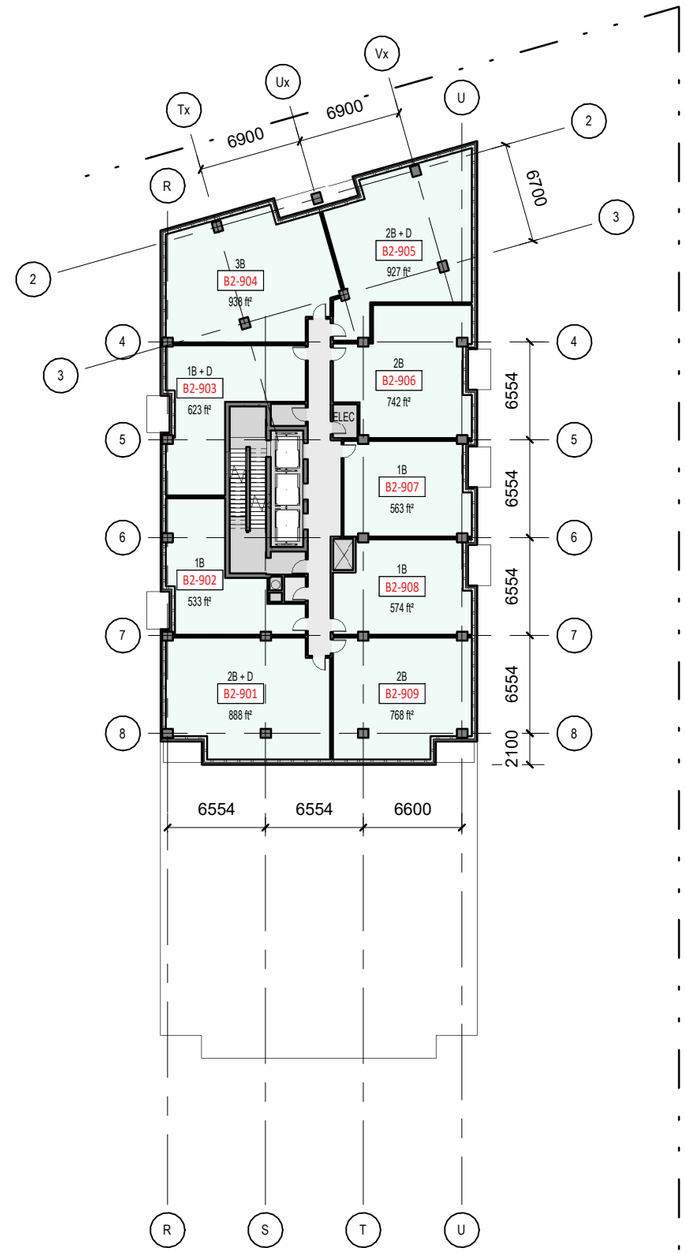


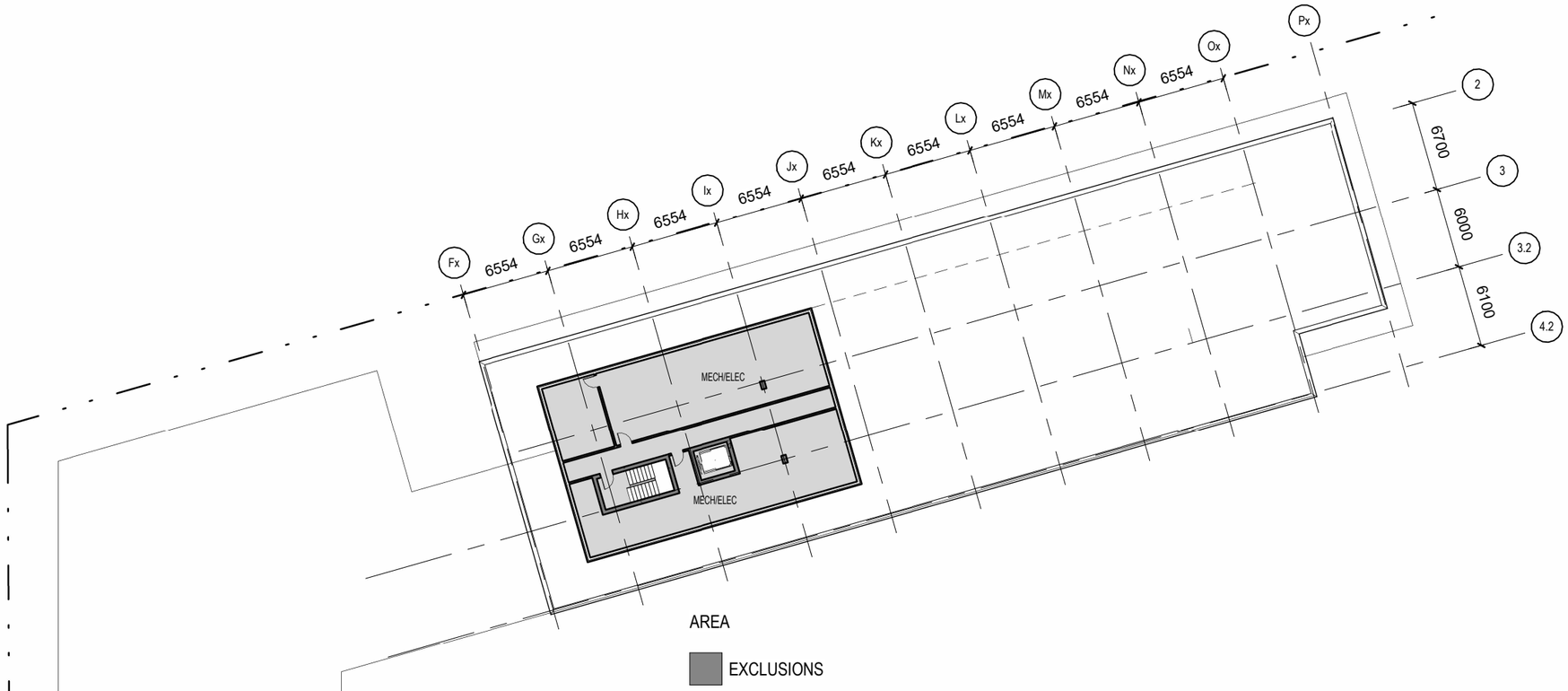
UNITS-LEVEL10-25-BLDG_2	
UNIT TYPE	COUNT
Level 8-B2	
1B	3
1B + D	1
2B	1
2B + D	2
3B	2
Level 9-B2	
1B	3
1B + D	1
2B	2
2B + D	2
3B	1
Level 10-B2	
1B	3
1B + D	1
2B	2
2B + D	2
3B	1
Level 11-B2	
1B	3
1B + D	1
2B	2
2B + D	2
3B	1
Level 12-B2	
1B	3
1B + D	1
2B	2
2B + D	2
3B	1

UNITS-LEVEL10-25-BLDG_2	
UNIT TYPE	COUNT
Level 13-B2	
1B	3
1B + D	1
2B	2
2B + D	2
3B	1
Level 14-B2	
1B	3
1B + D	1
2B	2
2B + D	2
3B	1
Level 15-B2	
1B	3
1B + D	1
2B	2
2B + D	2
3B	1
Level 16-B2	
1B	3
1B + D	1
2B	2
2B + D	2
3B	1
Level 17-B2	
1B	3
1B + D	1
2B	2
2B + D	2
3B	1

UNITS-LEVEL10-25-BLDG_2	
UNIT TYPE	COUNT
Level 18-B2	
1B	3
1B + D	1
2B	2
2B + D	2
3B	1
Level 19-B2	
1B	3
1B + D	1
2B	2
2B + D	2
3B	1
Level 20-B2	
1B	3
1B + D	1
2B	2
2B + D	2
3B	1
Level 21-B2	
1B	3
1B + D	1
2B	2
2B + D	2
3B	1
Level 22-B2	
1B	3
1B + D	1
2B	2
2B + D	2
3B	1

UNITS-LEVEL10-25-BLDG_2	
UNIT TYPE	COUNT
Level 23-B2	
1B	3
1B + D	1
2B	2
2B + D	2
3B	1
Level 24-B2	
1B	3
1B + D	1
2B	2
2B + D	2
3B	1
Level 25-B2	
1B	3
1B + D	1
2B	2
2B + D	2
3B	1
TOTAL UNITS: 162	

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MECH/ELEC
AREA
EXCLUSIONS

APPENDIX D

Water Demand Calculations and Figures

Water Supply Calculations

LRL File No.	220027
Date	2023-12-11
Prepared by	Tamara Harb
Project	6310 Hazeldean Road

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

Domestic Demand			
Unit Type	**Persons Per Unit**	**Number of Units**	**Population**
Studio	1.4	3	4.2
1 Bedroom Apartment	1.4	211	295.4
2 Bedroom Apartment	2.1	168	352.8
3 Bedroom Apartment	3.1	49	151.9
	Total	**431**	**804.3**

**Based on a daily demand of 280L/day per person as identified by Appendix 4-A of the Sewer design guidelines.*

Average Water Consumption Rate	280	L/c/d		
Average Day Demand	**225,204**	**L/d**	**2.61**	**L/s**
Maximum Day Factor	2.5		Table (3-3) MOE Peaking Factors	
Maximum Daily Demand	**563,010**	**L/d**	**6.52**	**L/s**
Peak Hour Factor	2.2		Table (3-3) MOE Peaking Factors	
Maximum Hour Demand	**1,238,622**	**L/d**	**14.34**	**L/s**

Institutional / Commercial / Industrial Demand				
Property Type	**Unit Rate**		**Units**	**Demand (L/d)**
Amenities	28000	L/ha/d	0.072 ha	2016.0

Average Day Demand	**2,016**	**L/d**	**0.023**	**L/s**
Maximum Day Factor	1.5		(Design Guidelines-Water Distribution Table 4.2)	
Maximum Daily Demand	**3,024**	**L/d**	**0.035**	**L/s**
Peak Hour Factor	1.8		(Design Guidelines-Water Distribution Table 4.2)	
Maximum Hour Demand	**5,443**	**L/d**	**0.063**	**L/s**

TOTAL DEMAND				
Average Day Demand	**227,220**	**L/d**	**2.63**	**L/s**
Maximum Daily Demand	**566,034**	**L/d**	**6.55**	**L/s**
Maximum Hour Demand	**1,244,065**	**L/d**	**14.40**	**L/s**

Water Service Pipe Sizing

Q = VA

Where: V = velocity
A = area of pipe
Q = flow rate

Assuming a maximum velocity of 1.8m/s, the diameter of pipe is calculated as:

Minimum pipe diameter (d) =	$(4Q/\pi V)^{1/2}$		
=	0.101	m	
=	101	mm	
Proposed pipe diameter (d) =	**150**	mm	
=	**6**	Inches	

Fire Flow Calculations

LRL File No.	220227
Date	December 11, 2023
Method	Fire Underwriters Survey (FUS)
Prepared by	Tamara Harb
Project Location	6310 Hazeldean Road

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	Non-combustible construction	**0.8**		
			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	Area of Structure concidered for FUS (effective floor area) (Sum of Two Largest Floors + 50% of Eight Additional Floors/					**9,414**	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	**18,000**
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	**15,300**
			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	**7,650**
			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	Northwest side	>30m	0%		L/min	**11,475**
			Southwest side	>30m	0%			
			Northeast side	10.1 to 20m	15%			
			Southeast side	20.1 to 30m	10%	**25%**		
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**

APPENDIX E

Sanitary Flow Calculations

LRL File No.	220027	**Sanitary Design Parameters**	**Pipe Design Parameters**
Project:	Mixed-Use Development	Average Daily Flow = 280 L/p/day	
Location:	6310 hazeldean Road	Commercial & Institutional Flow = 28000 L/ha/day	
Date:	December 12, 2023	Light Industrial Flow = 35000 L/ha/day	Industrial Peak Factor = as per Appendix 4-B = 7
		Heavy Industrial Flow = 55000 L/ha/day	Extraneous Flow = 0.33L/s/gross ha
		Maximum Residential Peak Factor = 4.0	
		Commercial & Institutional Peak Factor = 1.00	

LOCATION			RESIDENTIAL AREA AND POPULATION						COMMERCIAL		INDUSTRIAL			INSTITUTIONAL		C+I+I	INFILTRATION			TOTAL FLOW (l/s)	PIPE					
STREET	FROM MH	TO MH	AREA (Ha)	POP.	CUMMULATIVE AREA (Ha)	CUMMULATIVE POP.	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)		LENGTH (m)	DIA. (mm)	SLOPE (%)	MATERIAL	CAP. (FULL) (l/s)	VEL. (FULL) (m/s)
Hazeldean Road	Bldg	*EX. SAN*	**1.200**	**804.3**	1.20	804.3	3.3	8.57	0.056	**0.072**	0.00	0.00	7.0	0.0	0.0	0.04	1.200	1.200	0.40	**9.00**						

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

Designed: TH	PROJECT: Mixed-Use Development		
Checked: VJ	LOCATION: 6310 Hazeldean Rd		
Dwg. Reference: C.401	File Ref.: 220027	Date: 2023-12-12	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:	December 12, 2023
Designed:	Tamara Harb

Pre-Development Catchments

WATERSHED	C = 0.2	C = 0.80	C = 0.90	Total Area (m^2)	Total Area (ha)	Combined C
EWS-01	2850.0	9150.0	0.0	12000.0	1.200	0.66
TOTAL	**2850.0**	**9150.0**	**0.0**	**12000.0**	**1.200**	**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)	2568.0	0.0	1489.0	4057.0	0.406	0.46
WS-02 (CISTERN - CONTROLLED)	888.0	0.0	7055.0	7943.0	0.794	0.82
TOTAL	**3456.0**	**0.0**	**8544.0**	**12000.0**	**1.200**	**0.70**

LRL File No. 220027
Project: Mixed-use Development
Location: 6310 hazeldean
Date: December 12, 2023
Designed: Tamara Harb
Drawing Reference: C601

Stormwater Management Design Sheet

Runoff Equation

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

Pre-development Stormwater Management

$I_5 = 998.071 / (Td + 6.053)^{0.814}$ **a = 998.071** **b = 0.814** **C = 6.053**

C =	0.50	max of 0.5 as per City of Ottawa
I =	104.2	mm/hr
Tc =	10	min
Total Area =	1.200	ha

Allowable Release Rate= 173.79 L/s

Post-development Stormwater Management

					$\sum R_{2\&5}$	$\sum R_{100}$
	Total Site Area =	**1.2000**	ha	**∑R=**	**0.70**	**0.87**
Controlled	WS-02 (CONTROLLED)	0.794	ha	R=	0.82	1.00
	Total Controlled =	**0.794**	**ha**	**∑R=**	**0.82**	**1.00**
Un-controlled	WS-01(UNCONTROLLED)	0.406	ha	R=	0.46	0.57
	Total Un-Controlled =	**0.406**	**ha**	**∑R=**	**0.46**	**0.57**

Post-development Stormwater Management (Uncontrolled Catchment WS-01)

100 Year Storm Event:

$I_{100} = 1735.688 / (Td + 6.014)^{0.820}$ **a = 1735.688** **b = 0.820** **C = 6.014**

Time (min)	Intensity (mm/hr)	Uncontrolled Runoff (L/s)	Controlled Release Rate Constant (L/s)	Total Release Rate (L/s)
10	178.6	115.02	0.00	115.02

Post-development Stormwater Management (WS-03)

100 Year Storm Event:

$I_{100} = 1735.688 / (Td + 6.014)^{0.820}$ **a = 1735.688** **b = 0.820** **C = 6.014**

		Storage Required				
Time (min)	Intensity (mm/hr)	Controlled Runoff (L/s)	Storage Volume (m^3)	Controlled Release Rate Constant (L/s)	Uncontrolled Runoff (L/s)	Total Release Rate (L/s)
10	178.6	394.29	201.31	58.77	0.00	58.77
15	142.9	315.53	231.08	58.77	0.00	58.77
20	120.0	264.87	247.31	58.77	0.00	58.77
25	103.8	229.31	255.81	58.77	0.00	58.77
30	91.9	202.86	259.35	58.77	0.00	58.77
35	82.6	182.35	259.50	58.77	0.00	58.77
40	75.1	165.93	257.18	58.77	0.00	58.77
45	69.1	152.47	252.99	58.77	0.00	58.77
50	64.0	141.22	247.34	58.77	0.00	58.77
60	55.9	123.42	232.74	58.77	0.00	58.77
70	49.8	109.94	214.91	58.77	0.00	58.77
90	41.1	90.78	172.83	58.77	0.00	58.77
110	35.2	77.73	125.13	58.77	0.00	58.77
130	30.9	68.23	73.75	58.77	0.00	58.77
150	27.6	60.97	19.76	58.77	0.00	58.77
170	25.0	55.23	0.00	58.77	0.00	58.77

Total Storage Required = 259.50 m^3 refer to LRL Plan C.601

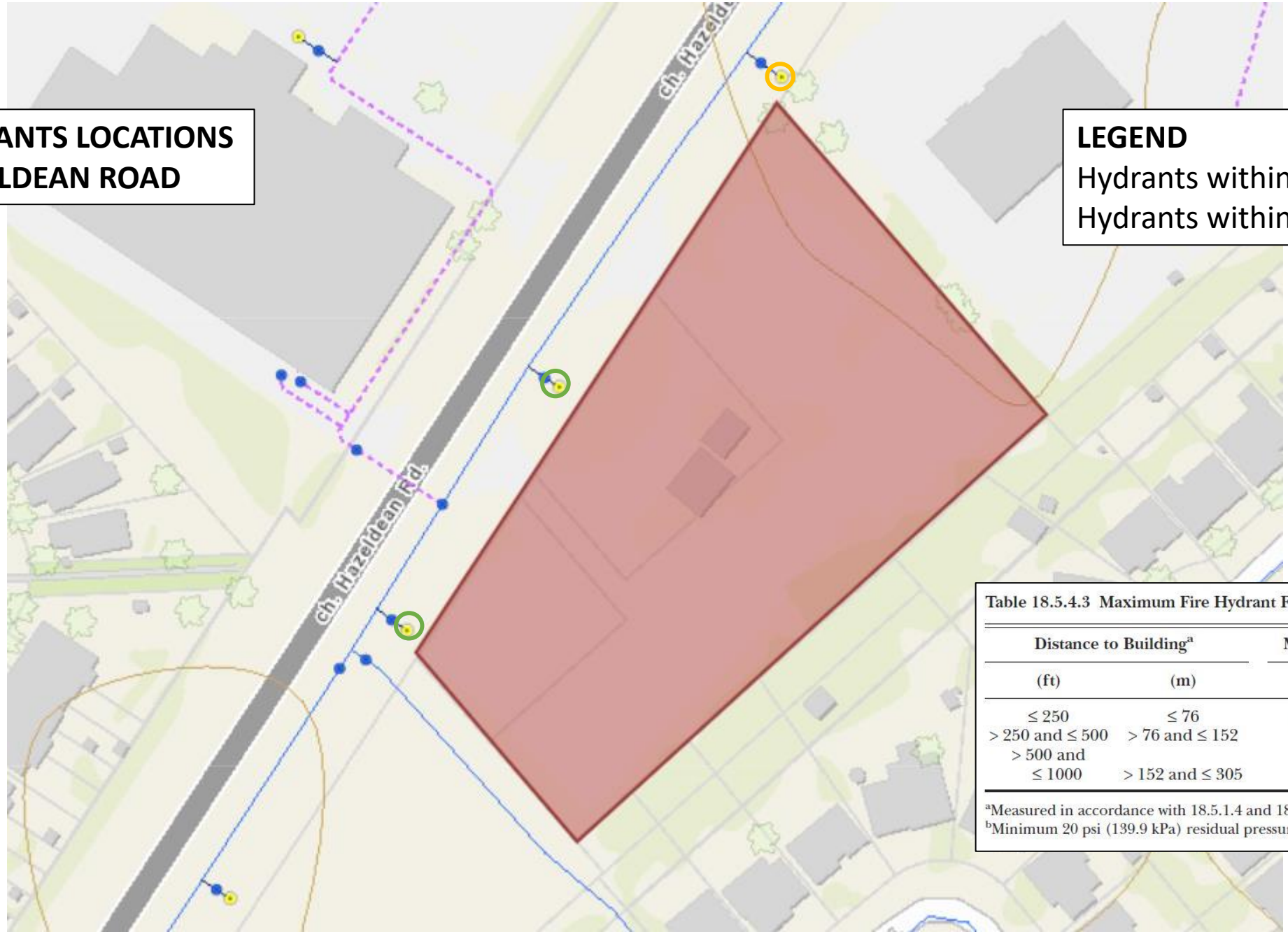
Summary of release Rates and Storage Volumes

Catchment Area	Drainage Area (ha)	100-year Release Rate (L/s)	100-Year Required Storage (m3)	Total Available Storage (m3)
WS-02 (Controlled)	0.794	58.77	259.50	260
WS-01 (Uncontrolled)	0.406	115.02	0.00	0.00
TOTAL	**1.20**	**173.79**	**259.50**	**260.00**

APPENDIX G

Fire Hydrant Coverage

FIRE HYDRANTS LOCATIONS
6310 HAZELDEAN ROAD



LEGEND
Hydrants within 75m
Hydrants within 150m

Table 18.5.4.3 Maximum Fire Hydrant Fire Flow Capacity

Distance to Building[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.

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