AGENDA - PLANNING COMMITTEE MEETING
June 11, 2026

A Regular Meeting of the Planning Committee will be held on Thursday, June 11, 2026, at 9:00 a.m., in a hybrid format from the Council Chambers, Municipal Offices, Port Carling, Ontario.

Members of the public may observe the proceedings in person or by accessing the live webcast on YouTube.

If the live webcast fails, the meeting may continue and the recording will be posted at a later date at: https://muskokalakes.civicweb.net/Portal/

Following the publishing of this agenda, public comments (maximum 5 minutes on any agenda item) may be provided. Please register with the Clerk or designate by completing and remitting this form by 9:00 a.m. on Wednesday, June 10, 2026. If registrations are received, the Clerk or designate will issue a Supplementary Agenda pursuant to the Council Procedure By-law. The public may then attend the meeting in person or electronically by zoom invitation, issued to those who register.

Correspondence received in relation to Agenda items can be found here.

Topic: Planning Committee

Join from PC, Mac, iPad, or Android:
https://us02web.zoom.us/j/88235609974?pwd=xRIe3ZpDW8GCmt2lho32n5K3uoX6ZL.1
Passcode:981816

Phone one-tap:
+15074734847,,88235609974#,,,,*981816# US
+15642172000,,88235609974#,,,,*981816# US

Join via audio:
+1 507 473 4847 US
+1 564 217 2000 US
+1 646 558 8656 US (New York)
+1 646 931 3860 US
+1 669 444 9171 US
+1 669 900 9128 US (San Jose)
+1 689 278 1000 US
+1 719 359 4580 US
+1 253 205 0468 US
+1 253 215 8782 US (Tacoma)
+1 301 715 8592 US (Washington DC)
+1 305 224 1968 US
+1 309 205 3325 US
+1 312 626 6799 US (Chicago)

+1 346 248 7799 US (Houston)
+1 360 209 5623 US
+1 386 347 5053 US
+1 780 666 0144 Canada
+1 204 272 7920 Canada
+1 438 809 7799 Canada
+1 587 328 1099 Canada
+1 647 374 4685 Canada
+1 647 558 0588 Canada
+1 778 907 2071 Canada
Webinar ID: 882 3560 9974
Passcode: 981816
International numbers available: https://us02web.zoom.us/u/kwclue1P5

Page

1. CALL TO ORDER

2. ACKNOWLEDGEMENT OF SUPPLEMENTARY AGENDA

   a. Chair to verbally acknowledge supplementary agenda.

3. DISCLOSURE OF PECUNIARY INTEREST

   a. None.

4. INVITED PRESENTATIONS

   a. None.

5. DELEGATIONS

   a. None.

6. PUBLIC COMMENTS (MAXIMUM 5 MINUTES ON ANY AGENDA ITEM OUTSIDE OF STATUTORY PUBLIC HEARINGS)

   a. Scott Aitchison, MP - Parry Sound - Muskoka
   Re: ZBA-22/26, OPA-67, ROYAL CANADIAN LEGION (BALA)

7. PLANNING PUBLIC MEETINGS

   a. Other Public Meetings

      1. None.

   b. Official Plan Amendment Applications

      1. Report PLAN-2026-079 — 6 - 482
      ZBA-22/26, OPA-67, ROYAL CANADIAN LEGION (BALA), 1011 Maple Avenue, Roll No. 7-10-050
      Explanation and Key Map
      Report
      Zoning Sketch & Site Plan
      Site Plan
      Floor Plans & Elevation Drawings

Draft OPA 67 and Schedules
Draft By-law and Schedules
Cover Memo
Geotechnical Report
Functional Servicing Report
Parking Study - Report
Survey
Test Pit Investigation Report
Planning Justification report
Transportation Impact Brief

c. Concurrent Zoning By-law Amendment and Consent Applications

1. None.

d. Zoning By-law Amendment Applications

1. Report PLAN-2026-082 483
ZBA-35/25, MACNAMARA, 2 Island J2 (Eagle Island), Roll No. 4-25-040-10 - 553
Explanation and Key Map
Report
Draft By-law & Schedules
Draft By-law (prepared by agent)
Boathouse and Dock Fish Habitat Assessment FINAL
Planning Justification Report
Zoning Sketch
Floor Plans, Elevation Drawings & Renderings

2. Report PLAN-2026-084 554
ZBA-13/26, MARS PROPERTIES HOLDINGS LTD., 1240 Ferndale Road, Roll No. 5-4-089 - 574
Explanation and Key Map
Report
Zoning Sketch
Draft By-law & Schedules

3. Report PLAN-2026-078 575
ZBA-19/26, DENBEIGH, GRENIER & JUNEAU-GRENIER, No Civic Address Assigned (Highway 141), Roll No. 2-26-005 - 591
Explanation and Key Map
Report
Zoning Sketches
Draft By-law & Schedules

8. ZONING BY-LAW / OFFICIAL PLAN

a. None.

9. SITE PLANS / PLANS OF SUBDIVISION AND CONDOMINIUM

a. None.

10. LONG RANGE PLANNING / SPECIAL PROJECTS / OTHER BUSINESS

a. None.

11. HERITAGE AND ATTAINABLE HOUSING

a. None.

12. DEVELOPMENT SERVICES

a. None.

13. BY-LAW ENFORCEMENT

a. Report from the Chief Municipal Law Enforcement Officer 592 - 597
Re: Report DSES-2026-022 - Administrative Penalty System (AMPS) for Zoning By-law
Report
Appendix I
Appendix II

b. Report from the Chief Municipal Law Enforcement Officer 598 - 631
Re: Report DSES-2026-023 - Draft Noise By-law

Report
Appendix I
Appendix II

14. UNFINISHED BUSINESS

a. Report PLAN-2026-086 632 - 708
ZBA-27/25, BROWN, No Civic Address, Roll #: 5-8-085
Report
Appendix I
Appendix II

15. NEW BUSINESS

a. None.

16. GENERAL INFORMATION

a. Ontario Land Tribunal Status Update

b. Staff Delegated Approvals
May 1, 2026 - May 31, 2026
Site Plans: 1 Residential, 0 Commercial

c. Correspondence - All correspondence received can be found here and is a matter of public record.

17. COMMITTEE IN CLOSED SESSION

18. ADJOURNMENT

a. Consideration of a resolution to adjourn.

A copy of this agenda is available in alternative formats upon request.

Today's meeting is being live streamed and recorded on the Township of Muskoka Lakes website and YouTube channel. By participating in the open public meeting today, you are consenting to your image, voice and comments being recorded and posted online.

1 Bailey Street
Port Carling, ON P0B 1J0
E: planning@muskokalakes.ca P: 705-765-3156 F: 705-765-6755

PLANNING COMMITTEE - NOTICE OF PUBLIC MEETING

THE CORPORATION OF THE TOWNSHIP OF MUSKOKA LAKES

Take notice that the Council for the Corporation of the Township of Muskoka Lakes will be considering a proposed amendment to the Official Plan of the Corporation of the Township of Muskoka Lakes pursuant to the provisions of Sections 17 and 21; and a proposed amendment to Zoning By-law 2014-14 pursuant to the provisions of Section 34; Planning Act, R.S.O., 1990., as amended.

File No.'s: OPA-67, ZBA-22/26
Roll No.: 7-10-050
By-law: Not Yet Assigned

Owner:	Royal Canadian Legion
Address:	1011 Maple Ave
Description:	Lot 14, Concession B, Lot 98, Plan 19, Part of Lot 79 to 82, Part of Lot 84, Lot 99 to Part of Lot 101, (Bala)
Zoning:	Institutional (I) Lake: N/A Schedule: 56
Meeting Date: Thursday, June 11, 2026, at 9:00 a.m.	

Take further notice that this public meeting will be held in a hybrid forum with electronic Zoom participation, and in-person format for those wishing to attend in-person. The meeting will be held in the **Council Chambers, Municipal Office, 1 Bailey Street, Port Carling, ON**. Should you wish to view an electronic copy of the Notice of Public Meeting for the above-noted application, please visit https://www.muskokalakes.ca/planning-notices/ or scan the QR code. Please note there may be a delay when the physical notice signs are posted and when the electronic copy of the Notice is available online.

Explanation of the Purpose and Effect:

The subject lands currently contain a one-storey building, which houses the Royal Canadian Legion – Branch 424. The proposal seeks to redevelop the property to result in a four-storey mixed-use building. A portion of the first storey is proposed to include the legion facilities and a medical clinic. The remainder of the first storey and the upper three stories are proposed to include 128 residential units, ranging in size from 1-2 bedrooms. Some of these units are proposed to be barrier free and approximately 33% of the residential units are intended to be offered at affordable or attainable rates.

An Official Plan Amendment Application (OPA-67) has been submitted to redesignate the subject lands from Institutional to Urban Residential. Schedule B2 of the Township's 2023 Official Plan details land use designations within the Urban Centre of Bala. OPA-67 also seeks to amend Section I4.1.2.3 e) of the Township's 2023 Official Plan, being the high-density residential development allowance. See Table 1 for details.

Table 1: Summary of Proposed Official Plan Amendments

Amendment	2023 Official Plan Section(s)	Description	Permitted	Proposed
A	Schedule B2	Bala Land Use Designations	Institutional	Urban Residential
B	I2.3.2.1 h)	Maximum Height for Development	14 Metres (45.9 Feet)	22 Metres (72.2 Feet)
C	I4.1.2.3 e)	High Density Residential Development Allowance	70 Units Per Gross Hectare	170 Units Per Gross Hectare

Concurrently, a Zoning By-law Amendment Application (ZBA-22/26) has been submitted. The purpose and effect of ZBA-22/26 is to rezone the subject lands from Institutional (I) to Community Residential – Multiple Residential High Density Sewer and Water (RM2), to permit a number of exemptions related to permitted uses, height, density, lot coverage, parking requirements, and other site-specific provisions, and to repeal the existing site-specific by-law (By-law 2017-104). See Tables 2 and 3 for more details.

Table 2: Summary of Proposed Rezoning Permissions

Existing Institutional (I) Zone Permissions	Proposed Community Residential – Multiple Residential High-Density Sewer and Water (RM2) Zone Permissions
Main: • Public Use • Nursing Home • Retirement Home • Home for the Aged • Arena • Curling Club • Service Club • Church • Place of Worship • Educational Institutions • Nursery School • Hospital • Nursing Station • Residential Use, Accessory	Main: • Residential – Converted Dwelling • Residential – Duplex Dwelling • Residential – Semi Detached Dwelling • Residential Townhouse • Residential Apartment Dwelling • Group Home • Senior Citizen Home • Rooming House

Table 3: Summary of Requested Exemptions

Exemption	ZBL 2014-14 Section(s)	Description	Permitted	Proposed	Relief	Proposal
A	3.28 a)	Minimum Number of Required Parking Spaces	Apartment Dwelling (1.75 Spaces/Unit + 1 Space/2 Units): 228 Spaces Office (1 Space per 322.9 sq. ft.): 1 Space Medical Clinic (1 Space per Practitioner): 5 Spaces Restaurant (1 Space per 215.3 sq. ft.): 21 Spaces Service Club (1 Space per 215.3 sq. ft.): 7 Spaces	56 Spaces	206 Spaces	Construct 4 Storey Mixed Use Building
B	3.28 b)	Minimum Number of Required Barrier Free Parking Spaces	11 Barrier Free Spaces (1 Space/25 Spaces Required)	1 Barrier Free Space	5 Barrier Free Spaces	
C	5.1.3	Maximum Lot Coverage	35%	45%	10%	
D	5.1.3	Maximum Building Height	35 Feet	72.2 Feet	37.2 Feet	
E	5.1.3	Maximum Number of Storeys for an Apartment Dwelling	-	4 Storeys	-	

Exemption	ZBL 2014-14 Section(s)	Description	Permitted	Proposed	Relief	Proposal
F	5.1.3	Minimum Required Landscaped Area	35%	25%	10%	
G	5.1.8	Density of Development	60 Units/Hectare	170 Units/Hectare	110 Units/Hectare	
H	Repeal Site-Specific By-law 2017-104			Repeal By-law 2017-104	-	Repeal By-law 2017-104 and Gain New Exemptions as Detailed Above

A key map of the subject property, the applicant's site plan and any drawings as well as a draft By-law and draft Official Plan Amendment are included in this notice.

For more information, please contact the Planning Division weekdays between 8:15 a.m. and 4 p.m. at the Municipal Office, or at planning@muskokalakes.ca or by phone at (705) 765-3156. **Please quote the file number noted above.**

How to Participate:

Submit Comments in Writing

Submit comments to planning@muskokalakes.ca, deliver in-person, or mail to P.O. Box 129, 1 Bailey Street, Port Carling, ON, P0B 1J0. For correspondence to be included on the agenda, please submit your comments by **June 4, 2026.**

Personal information collected in response to this Notice of Public Meeting will be used to assist staff and Council to process this application and will be made public.

Active Participation In-Person or on Zoom

Hybrid meetings are held at 9:00 a.m. on the above-noted meeting date in Council Chambers at the Municipal Office. For more information about participating via Zoom, visit www.muskokalakes.ca/zoom

If you wish to speak to the Planning Committee at the meeting by electronic participation, please contact planning@muskokalakes.ca by 9:00 a.m. on the regular business day preceding the scheduled meeting.

Watch the Meeting Online

You can access the meeting from YouTube on the Township of Muskoka Lakes YouTube Channel. If the live webcast fails, the meeting recording will be posted under the Government Portal on www.muskokalakes.ca

FAILURE TO PARTICIPATE IN MEETING: If you do not participate in the meeting it may proceed in your absence and, except as otherwise provided in the Planning Act, you will not be entitled to any further notice in the proceedings.

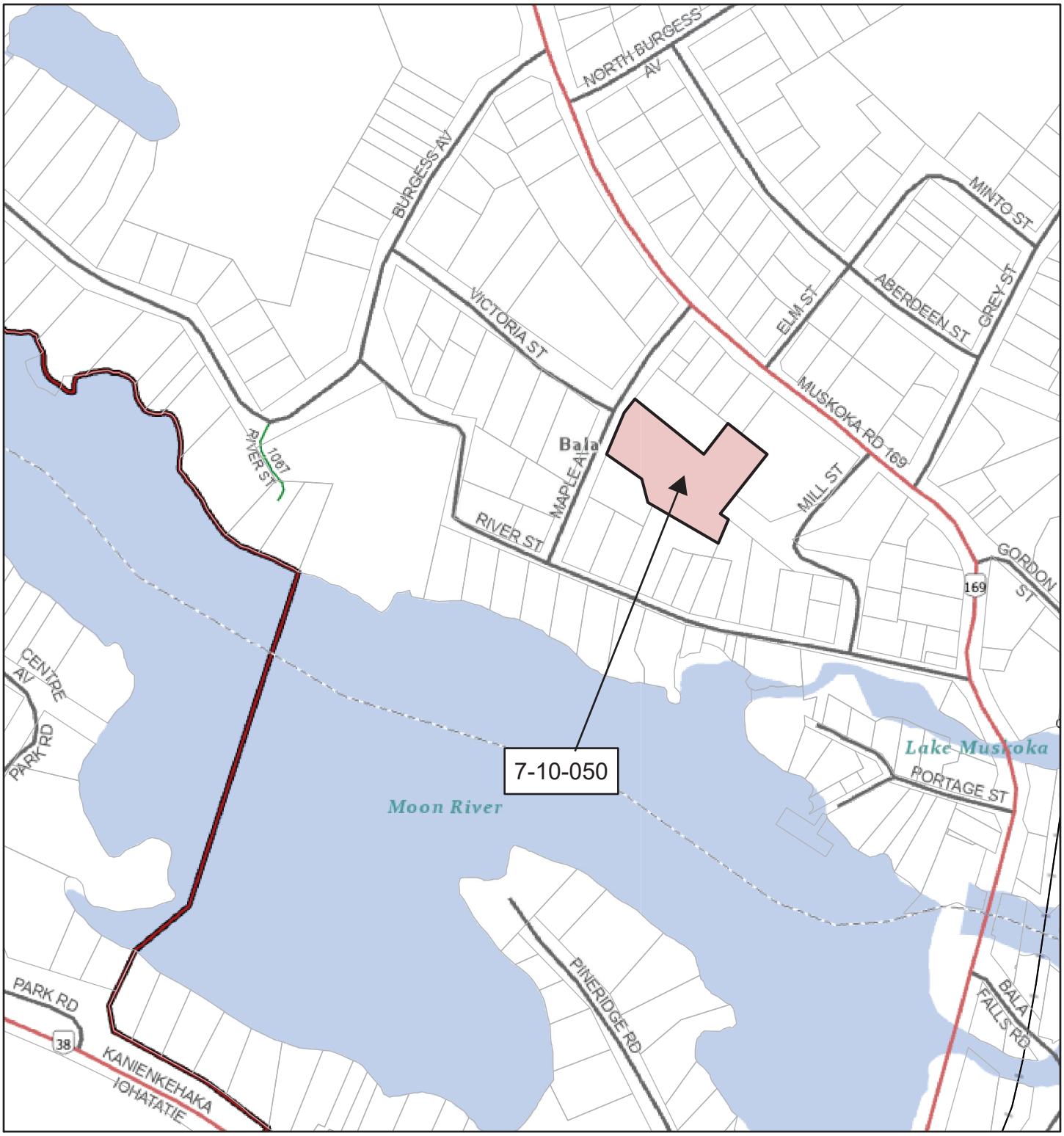
NOTICE OF PASSING & APPEALS: If you wish to be notified of the decision of the Council of the Township of Muskoka Lakes in respect to this application, you must make a written request to planning@muskokalakes.ca.

Furthermore, if a person or public body would otherwise have an ability to appeal the decision of the Council of the Township of Muskoka Lakes to the Ontario Land Tribunal but the person or public body does not make oral submissions at a public meeting or make written submissions to the Township of Muskoka Lakes before the by-law is passed, the person or public body is not entitled to appeal the decision. The person or public body may not be added as a party to the hearing of an appeal before the Ontario Land Tribunal unless, in the opinion of the Tribunal, there are reasonable grounds to do so.

Notwithstanding the above, subsection 21(7) and 34(19) of the Planning Act defines the parties that are eligible to appeal the decision to the Ontario Land Tribunal.

Dated at the Township of Muskoka Lakes this 22nd day of May, 2026.
Crystal Best-Sararas, Clerk
Corporation of the Township of Muskoka Lakes

KEY MAP (ZBA-22/26, OPA-67)



NOT A PLAN OF SURVEY. FOR INFORMATIONAL PURPOSES ONLY.

Parcel: Assessment
District Municipality
Area Municipality
Geographic Township
Settlement Areas
Urban Centre

Road Network
District
Township
Private
Wetland With Significance
Evaluated-Provincial

Evaluated-Other
Stream
Waterbody
Major Lake
Canada_Hillshade
World_Hillshade

1:6,623

0 0.04 0.08 0.16 mi
0 0.05 0.1 0.2 km

Sources: NRCan, Esri Canada, and Canadian Community Maps contributors., Sources: Esri, Vantor, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, and the GIS user community

Staff Report PLAN-2026-079
Planning Committee
June 11, 2026

TO: **Chair Bosomworth and Members of Planning Committee**

AUTHOR: **Emily Crowder, Senior Planner**

SUBJECT: **OPA-67, ZBA-22/26 (ROYAL CANADIAN LEGION), Lot 14, Concession B, Lot 98, Lot 98, Plan 19, Part of Lot 79 to 82, Part of Lot 84, Lot 99 to Part of Lot 101, (Bala), Civic Address: 1011 Maple Ave, Roll #: 7-10-050**

RECOMMENDATION

OPA-67 & ZBA-22/26

THAT a decision on Official Plan Amendment Application OPA-67 and Zoning By-law Amendment Application ZBA-22/26 (ROYAL CANADIAN LEGION), be DEFERRED so that public and agency comments can be received, and that staff be directed to undertake a review and analysis of the submissions;

AND THAT as part of the DEFERRAL, a revised proposal is received which demonstrates a reduction in height and density and provides a satisfactory parking solution before approval can be considered.

REPORT HIGHLIGHTS

This report provides background, overview and analysis of the information currently available for concurrent Official Plan Amendment Application OPA-67 and Zoning By-law Amendment Application ZBA-22/26 (ROYAL CANADIAN LEGION) in support of the public meeting.

Staff support residential intensification and additional housing on the site, however, the scale, height, and parking arrangements proposed have not been demonstrated to be appropriate and therefore staff cannot support the applications in their current form. Staff also recommend that the applications be deferred for public and agency comments to be received and considered.

BACKGROUND



Figure 1: Existing Bala Legion building.

The subject lands currently contain a one-storey building, which houses the Royal Canadian Legion – Branch 424. The proposal seeks to redevelop the property to result in a four-storey mixed-use building with a partially underground parking facility. A portion of the first storey is proposed to include the legion facilities (i.e.: ceremony hall, restaurant, bar, office, etc.) and a medical clinic. The remainder of the first storey and the upper three stories are proposed to include 128 residential units, ranging in size and including both 1- and 2-bedroom units. Some of these units are proposed to be barrier free and approximately 33% of the residential units are intended to be offered at affordable or attainable rates. It is important to note that there is a very clear distinction between the term “affordable” and “attainable”. The term “affordable” is defined within the Provincial Planning Statement and per the Canadian Mortgage and Housing Corporation (CMHC) which requires rent to be no greater than 30% of the average household of the market area. The term “attainable” is a nebulous term with no such provisions.

An Official Plan Amendment Application (OPA-67) has been submitted to redesignate the subject lands from “Institutional” to “Urban Residential”. Schedule B2 of the Township’s 2023 Official Plan details land use designations within the Urban Centre of Bala. OPA-67 also seeks to amend Section I4.1.2.3 e) of the Township’s 2023 Official Plan, being the high-density residential development allowance. Further, OPA-67 seeks to amend Section I2.3.2.1 h) of the Township’s 2023 Official Plan, being the maximum height for development. See Table 1 for details.

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Amendment	2023 Official Plan Section(s)	Description	Permitted	Proposed
A	Schedule B2	Bala Land Use Designations	Institutional	Urban Residential
B	I2.3.2.1 h)	Maximum Height for Development	14 Metres (45.9 Feet)	22 Metres (72.2 Feet)
C	I4.1.2.3 e)	High Density Residential Development Allowance	70 Units Per Gross Hectare	170 Units Per Gross Hectare

Concurrently, a Zoning By-law Amendment Application (ZBA-22/26) has been submitted. The purpose and effect of ZBA-22/26 is to rezone the subject lands from "Institutional Holding (I-H)" to "Community Residential – Multiple Residential High Density Sewer and Water – Holding (RM2-H)", to permit a number of exemptions related to permitted uses, height, density, lot coverage, parking requirements, and other site-specific provisions as well as to repeal the existing site-specific by-law (By-law 2017-104). See Tables 2 and 3 for more details.

Table 2: Summary of Proposed Rezoning Permissions

Existing Institutional – Holding (I-H) Zone Permissions	Proposed Community Residential – Multiple Residential High-Density Sewer and Water – Holding (RM2-H) Zone Permissions
Main: • Public Use • Nursing Home • Retirement Home • Home for the Aged • Arena • Curling Club • Service Club • Church • Place of Worship • Educational Institutions • Nursery School • Hospital • Nursing Station • Residential Use, Accessory	Main: • Residential – Converted Dwelling • Residential – Duplex Dwelling • Residential – Semi Detached Dwelling • Residential Townhouse • Residential Apartment Dwelling • Group Home • Senior Citizen Home • Rooming House

Table 3: Summary of Requested Exemptions

Exemption	ZBL 2014-14 Section (s)	Description	Permitted	Proposed	Relief	Proposal
A	3.28 a)	Minimum Number of Required Parking Spaces	Apartment Dwelling (1.75 Spaces/Unit + 1 Space/2 Units): 228 Spaces	56 Spaces (Where 262 are Required)	206 Spaces	Construct 4 Storey Mixed Use Building
			Office (1 Space per 322.9 sq. ft.): 1 Space			
			Medical Clinic (5 Space per Practitioner): 5 Spaces[1]			
			Restaurant (1 Space per 215.3 sq. ft.): 21 Spaces			
			Service Club (1 Space per 215.3 sq. ft.): 7 Spaces			
B	3.28 b)	Minimum Number of Required Barrier Free Parking Spaces	11 Barrier Free Spaces (1 Space/25 Spaces Required)	5 Barrier Free Space[2]	6 Barrier Free Spaces[2]	
C	5.1.3	Maximum Lot Coverage	35%	45%	10%	

Exemption	ZBL 2014-14 Section (s)	Description	Permitted	Proposed	Relief	Proposal
D	5.1.3	Maximum Building Height	35 Feet	72.2 Feet	37.2 Feet	
E	5.1.3	Maximum Number of Storeys for an Apartment Dwelling	-	4 Storeys	-	
F	5.1.3	Minimum Required Landscaped Area	35%	25%	10%	
G	5.1.8	Density of Development	60 Units/Hectare	170 Units/Hectare	110 Units/Hectare	
H	Repeal Site-Specific By-law 2017-104			Repeal By-law 2017-104	-	Repeal By-law 2017-104 and Gain New Exemptions as Detailed Above

[1] Please note that the Notice of Public Meeting cited that the required parking for a clinic is 1 space per practitioner, whereas the correct requirement is 5 spaces per practitioner. The 'proposed' and 'relief' values remain the same.
[2] Please note that the numerical values for barrier free parking were incorrectly cited in the Notice of Public Meeting package. The correct number of barrier free spaces proposed is 5, resulting is a requested relief of 6. The total number of barrier free spaces required per the Township's Zoning By-law is 11.

The purpose and effect of the proposed Official Plan Amendment and concurrent Zoning By-law Amendment are to replace the existing Royal Canadian Legion building with a new multi-use, multi-storey residential apartment building. The subject lands, which have an area of 88,427 square feet, currently contain a one-storey building, which houses the Royal Canadian Legion – Branch 424.

The site-specific property details are outlined in Table 4 below.

Table 4: Site-Specific Property Details

Matter	Comment
Official Plan Designation (November 2023 Consolidation)	Urban Centre - Institutional
Official Plan Designation (April 2013 Consolidation)	Urban Centre - Institutional and Core Commercial
Zoning (ZBL 2014-14, as amended)	Institutional - Holding (I-H)
Zoning Schedule	56
Access	1011 Maple Avenue (Public Road – Township, Year-Round Maintained)
Servicing	Municipal (District) Water and Sewer
Lot Area	83,158 sq. ft. (1.91 acres)
Lot Frontage	165.7 ft.
Abutting Zoning Categories	Institutional (I), Community Residential (R1), Community Commercial (C4), Unopened Road Allowance
Original Shore Road Allowance	N/A
Lake/River Category	N/A
Site Plan Control	Proposed Zoning and Development are Subject to Site Plan Control.

Planning History

Zoning By-law Amendment Application ZBA-42/17, was approved by Council on October 13, 2017 through By-law 2017-104. The application and associated By-law permit the development of a four-storey retirement home to be attached to the existing Legion building. The retirement home was proposed to contain 128 units and include common facilities such as a dining room, fitness studio, theatre, laundry, common areas, etc. and administrations and support staff space. A portion of the existing legion building was to be used as a medical clinic and a new Legion bar. To facilitate this proposal, By-law 2017-104 was approved to permit a lot coverage for a retirement home of 67%, a reduced minimum interior side yard setback for a parking structure, and a maximum permitted height of 55 feet. Staff would note that the previous proposal was able to provide all required parking on site however parking requirements for the institutional use were less than the amount required for the proposal at hand. Prior to third reading being granted, Council amended the By-law for a number of items, one of which was the rezoning of the lands from Institutional (I) to Institutional – Holding (I-H). By-law 2017-104 states that the holding symbol is not to be lifted until Council is satisfied that the following has been addressed:

1. The lands be subject to a development agreement with the District Municipality of Muskoka respecting capacity and the provision of municipal services, and the implementation of satisfactory traffic study recommendations regarding Muskoka Rd 169; and

2. That it is satisfactorily demonstrated that the property is one contiguous parcel.

These items have not been addressed and the Holding (-H) provision remains in place to date.

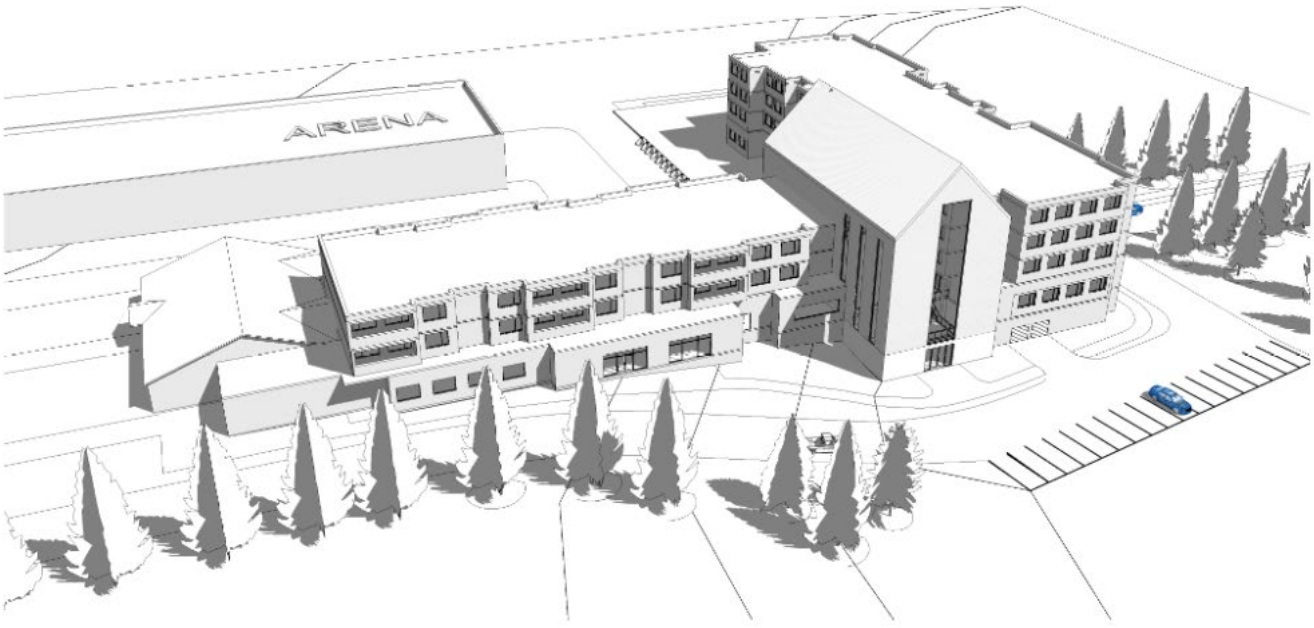


Figure 2: Concept of the previously approved retirement home through By-law 2017-104.

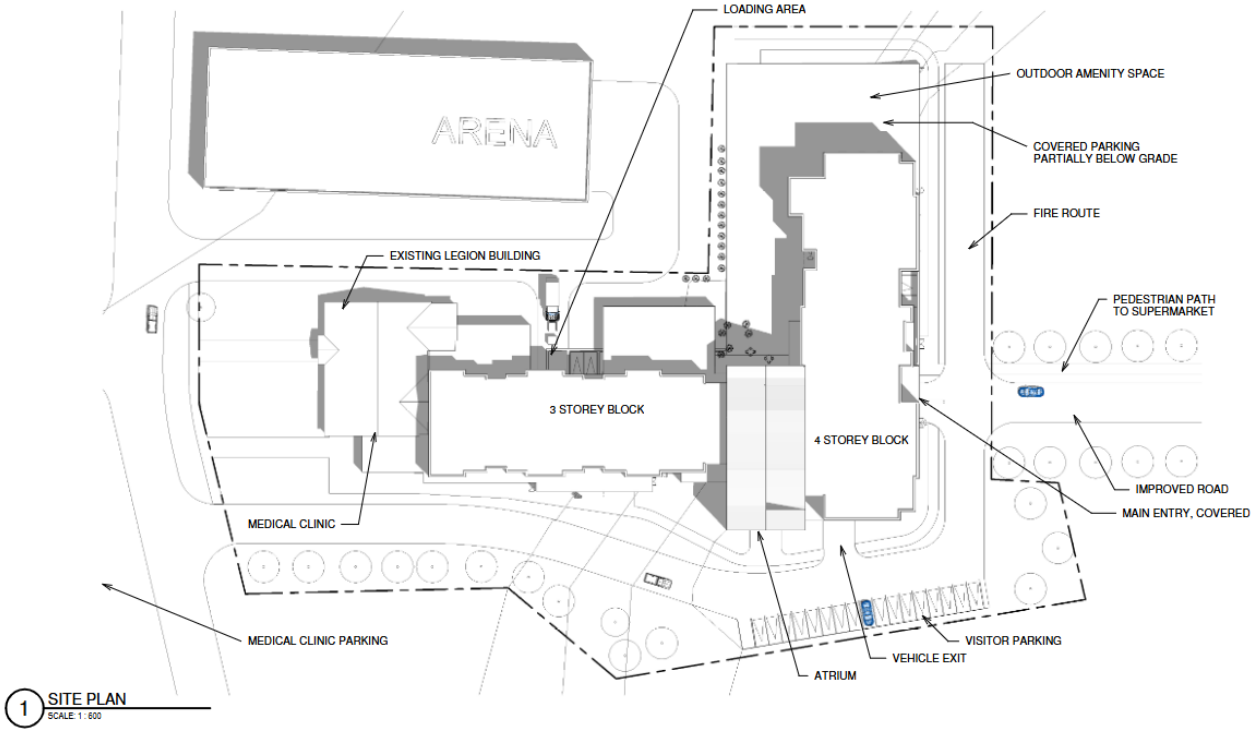


Figure 3: Site plan of previous proposal approved through By-law 2017-104.

ANALYSIS

Public Consultation

Notice of this public meeting to be held under the Planning Act for these applications was circulated 21 days in advance of this scheduled June 11, 2026, meeting date and five (5) written departmental comments have been received at the time of writing (see Table A3 below).

Comments were received from the Development Services Division stating no objection to the applications. It was noted that, as per the Ontario Building Code (OBC), this will be considered a 5 storey building with a mechanical penthouse. Also, it was noted that, while fully compliant building code plans are not yet available, the Chief Building Official has emphasized that fire access routes, spatial separation and setbacks from property lines are items that the applicant should consider in advance of building permit application. These comments also identify a lack of parking and inconsistencies with tables on the provided drawings.

Comments were received from the Township's Operational Services Department, recommending that the Traffic Impact Study and Stormwater Management components of the Functional Servicing Report be peer reviewed to verify that there are no concerns from an Operational Services perspective. Operational Services (OS) further recommends that changes be made to the submitted Stormwater Management Plan to address matters including, but not limited to, external drainage areas, downstream infrastructure, storage information, etc. Further, commercial entrance permits will be required to be obtained and OS notes that the proposed entrance onto Mill Street appears to utilize a portion of unopened road allowance to traverse the street. Further discussion on the use of the road allowance may be required.

Comments were received from the Township's Legislative Services Department, stating that staff have concerns with the usage of Township lands to accommodate parking for this proposal. Staff note that the Township lot is currently used for parking for the Township's Bala Community Centre and Bala Arena that is located across the road.

Comments were received from the Township's Emergency Services Department, stating that based on the information currently available, they have no objections to the applications subject to compliance with the current Ontario Building Code, Ontario Fire code, National Fire Protection Association (NFPA) standards, municipal requirements, and conditions that may arise through detailed design and building permit review.

Lastly, comments were received from the District Municipality of Muskoka, stating no objection to the applications.

Any written comments received up to June 4, 2026, will be attached to Committee's Agenda under Section 16.

Functional Servicing Report

As part of the applications, a Functional Servicing Report (FSR), prepared by Pinestone Engineering Ltd. and dated April 23, 2026, was submitted. The purpose of the FSR is to review the existing municipal servicing infrastructure relative to the proposal and to provide recommendations for sanitary servicing, water supply, and stormwater management in accordance with applicable policy requirements. A summary of the report's findings is as follows:

- The proposed development will be serviced by an existing 200 mm diameter gravity sanitary sewer located on Maple Avenue. Design sanitary flow has been sent to the District of Muskoka to confirm availability of capacity.

- Water for the proposed development will be supplied from an existing 250 mm diameter watermain on Mill St. A new 200 mm water service will connect the site to the watermain and split at the property line into a 200 mm fire service and a 100 mm domestic service. A fire hydrant is proposed at the Mill Street access for on-site fire protection. Domestic and fire flow requirements have been submitted to the District of Muskoka to verify available system pressures and flows.

- All on-site servicing is considered private plumbing and is subject to approval as per the Ontario Building Code (OBC). A Servicing Agreement or Enhanced Connection Permit from the District will be required to secure servicing allocation for the development.

- An existing storm sewer traversing the site requires replacement and rerouting to divert upstream drainage around the development. Assessment of the downstream storm sewer system discharging to River Street is required at the detailed design stage (Site Plan Approval process).

- A comparison of pre-development and post-development stormwater flowrates indicate that peak flows directed to the River Street municipal storm sewer will increase during all major storm events due to increased impervious area.

- Attenuation of peak post-development flowrates to pre-development levels are proposed to be provided by utilizing parking lot surface ponding, sub-surface tank storage, and storm sewer storage.

- Stormwater quality control will be achieved using a "treatment train" of techniques including the installation of a hydrodynamic separator, reduced lot grading, and provision of soft landscaping where feasible.

As noted above, the Township's Operational Services Department has requested that the FSR be updated to address their comments. Once updated, staff recommend that the report be peer reviewed by a qualified third party consultant. The drafted By-law includes a holding provision to be imposed wherein the FSR be peer reviewed to the satisfaction

of the Township and the District, and that any recommendations be addressed, as necessary. Accordingly, no revisions to be draft By-law are required at this time.

Geotechnical Investigation Report

A Geotechnical Investigation Report (GIR), prepared by Soil Engineers Ltd. and dated March 2026, was submitted as part of the applications. The purpose of the GIR is to provide geotechnical engineering recommendations for the design and construction of the proposed development. The findings of the GIR indicate that beneath the topsoil and earth fill, the site is underlain by native sandy silt and Precambrian granite bedrock. A number of geotechnical findings warrant special considerations, including but not limited to:

- Before grading and construction begin, all vegetation, topsoil, and organic mixed soil must be removed from the site. Topsoil and organic mixed soil can be reused only in approved landscaping areas, and any excess material must be taken off-site.

- Following demolition, all debris and any underground utilities must be removed and disposed of off-site. Resulting excavations must be backfilled with clean inorganic on-site soil, free of organics and deleterious material, and compacted to meet engineered fill requirements.

- The existing fill is not suitable for supporting structures as-is. To be reused, it must be excavated, cleaned of organic and unsuitable materials, and recompacted in layers. If proper sorting is not feasible, the fill must be removed and replaced with compacted inorganic fill.

- Additional earth fill can be constructed in an engineered manner for building support, pavement and underground services construction.

- The proposed structure may be supported on conventional spread or strip footings placed on bedrock or engineered fill. The footing subgrade must be inspected by a geotechnical professional to confirm it meets the foundation design requirements.

- A Class ‘B’ bedding, consisting of 199-mm Crusher-Run Limestone (CRL) or equivalent, can be used for underground service construction.

A number of recommendations are made within the report relative to site preparation, foundation, underground structure, underground services, backfilling in trenches and excavated areas, pavement design, soil parameters and excavation.

Parking Justification Report

As part of the applications, a Parking Justification Report, prepared by Tatham Engineering and dated April 23, 2026, was submitted. The purpose of this report is to

establish the parking needs of the proposal and to justify an appropriate parking supply. The applications propose 56 on-site parking spaces, 5 of which will be barrier free. The report concludes that 112 parking spaces for resident use is appropriate and is supported by the parking demand data collected at proxy sites, parking rates adopted by other municipalities for comparable uses, ITE parking demand data, and reduced parking demands associated with affordable housing developments. Staff have reviewed the report and have a number of concerns/questions surrounding current lack of ownership of proposed spaces, absence of public transit options in Bala, inability to ensure housing affordability, impacts of snow storage and appropriateness of selected comparator municipalities, which have all been passed along to Tatham.

A response to the above considerations/questions has not yet been received. Staff would note that the applicant/agent have since engaged in discussions with the Township regarding the procurement of additional parking spaces. Several avenues are being explored, including agreements with private landowners, angled street parking, improved parking on-site, expanded street parking, etc. Staff would note that the adjacent Township owned parking lot is utilized by existing community facilities (i.e.: the arena and community centre) and for the Cranberry Festival. Further, any parking proposed on Township owned land (i.e. road allowances) would require further discussion and agreements with the Township. The Township's Zoning By-law does not recognize the use of leased parking spaces as attributing toward the required parking count.

Until such time as parking is satisfactorily addressed, the drafted By-law includes a Holding (-H) provision respecting the procurement of sufficient parking. See Exemptions A and B for staff's analysis on the proposed parking supply.

Planning Justification Report

A Planning Justification Report (PJR), prepared by Morgan Planning & Development Inc. and dated April 2026, was submitted in support of the applications. The purpose of the PJR is to provide an overview of the proposal and to assess the subject applications in the context of applicable Provincial and Municipal policies. The PJR provides a description of the subject lands, surrounding land uses, an overview of the site plan, conceptual site renderings, building elevation drawings, conceptual floor plans, an overview of the existing site-specific approval on the lands (By-law 2017-104). It also provides a review of the Muskoka Official Plan, Township of Muskoka Lakes 2023 Official Plan, and the Township's Comprehensive Zoning By-law 2014-14 relative to conformity and compliance of the proposal. The PJR includes a drafted Official Plan Amendment and Zoning By-law Amendment. As per the PJR, a key component of the proposal is the provision of a target of 33% of the units to be offered as affordable or attainable housing and 20% to meet accessibility standards. However, as noted above, the terms "affordable" and "attainable" have significant differences and implications. The PJR states that "The proposed development includes a significant attainable housing component, with approximately 33% of the total units (approximately 42 units) intended to be offered at affordable or attainable rates." Further, the PJR goes on to state that the units are designed to be affordable to low and moderate income households, while also being adequate in condition and appropriate in size. Staff have reached out to the agent to

confirm if units are intended to be “affordable” per PPS and CMHC definition, but a response had not been received at time of writing. The report concludes that the proposed development is consistent and conforms with the Provincial, District and Township policy framework, all of which direct growth and intensification to designated Settlement Areas. Further, the PJR states that the proposal represents an efficient use of land and infrastructure, achieving a density that exceeds directed minimum targets, while contributing to the development of a complete, compact, and sustainable community.

Traffic Impact Brief

A Transportation Impact Brief (TIB), prepared by Tatham Engineering and dated April 23, 2026, was submitted as part of the applications. The purpose of the TIB is to assess the potential transportation impacts of the proposed development on the area road network. The findings of the study are summarized as follows:

- The development is expected to generate 50 new vehicle trips during the weekday AM and PM peak periods.
- The proposed development will not have a significant impact on the operations of the adjacent road system.
- Sight lines for access points on Maple Avenue and Mill Street are sufficient.
- Turn lanes are not required to support the proposed development.

As noted above, commercial entrance permits will be required to be obtained and Operational Services notes that the proposed entrance onto Mill Street appears to utilize a portion of unopened road allowance to traverse the street. Further discussion on the use of the road allowance may be required. Further, Operational Services has requested that the Brief be peer reviewed. The drafted By-law includes a holding provision wherein the TIB be peer reviewed to the satisfaction of the Township and the District, and that any recommendations be addressed, as necessary. Accordingly, no revisions are required to the draft By-law in this respect.

Precedent

Staff would note that the Township receives significant development pressure to build at higher intensity and density than contemplated through the Township’s Zoning Bylaw and recently approved Official Plan, and that approval of the applications as currently proposed have the potential to establish precedents for development moving forward. Staff is of the opinion that additional development(s) of this scale in the urban centres runs the risk of considerably changing their character, and that doing so would run counter to the current direction of the Official Plan. While a broader review of policies in the urban centres can be undertaken to update desired development form to permit higher densities and heights should Council wish, the current applications are site specific and on this basis, staff is not of the opinion they represent good planning.

Site Plan Control

To implement the recommendations of the aforementioned technical documents, staff note that the subject development would be required to obtain site plan approval prior to issuance of Building Permit(s). A satisfactory Site Plan Agreement would as part of that process be entered into and registered on title, along with securities, for matters including, but not limited to, the implementation of the recommendations made within the following studies and any of their affiliated update/revision reports:

- Functional Servicing Report (FSR), prepared by Pinestone Engineering Ltd. and dated April 23, 2026;
- Geotechnical Investigation Report (GIR), prepared by Soil Engineers Ltd. and dated March 2026;
- Parking Justification Report, prepared by Tatham Engineering and dated April 23, 2026; and
- Transportation Impact Brief, prepared by Tatham Engineering and dated April 23, 2026.

Community Improvement Plan for Bala

The Township of Muskoka Lakes has a Community Improvement Plan (CIP) for the Urban Centres of Bala and Port Carling. A CIP is a planning tool to support strategic community investment priorities. A CIP provides a framework for public investment opportunities in the public realm and the provision of incentive programs to assist the private sector to stimulate redevelopment and to facilitate property improvements.

The CIP identifies two locations as possibilities for long-term intensification in Bala, one of which is the Bala Legion. The subject lands are noted as a possible site for infill/redevelopment to accommodate additional housing (including affordable housing), more specifically, seniors housing. Staff would note that the existing site-specific approval for a retirement home existed at the time the CIP was developed. The lands are described as being in the ‘Highway 169 North’ area of Bala, defined by large format retail with surface parking, stand alone buildings on the north side, and limited defined pedestrian route with asphalt path.

Urban Design Guidelines are included within the CIP which provide design guidance for infill and intensification in Bala. The design objective for new developments is primarily to maintain and reinforce the ‘small town’ and ‘human-scaled’ character of the area. General guidelines within the CIP speak to height, massing, street wall/facades, shopfront signage, awnings/canopies and lighting, access, loading and parking. These provisions should be reviewed closely in the development of plans for the subject lands. More specifically, the CIP includes ‘Large Site Guidelines’ for five key large sites within Bala and Port Carling. The subject lands are one of the five identified key sites.

A conceptual organization plan of the subject lands is included within the CIP (see Figure 4). The CIP provides the following details:



Figure 4: Conceptual organizational plan of the Bala Legion site (image taken from the CIP).

Area A: Connect the existing Bala Legion building to new development. Preserve the space in front of the Legion building for events. Consider replacing the Bala Legion building and integrating its uses into the new development. This would potentially allow for additional useable floor area above the Bala Legion uses and provide a front door/address on Maple Street.

Staff comment: The proposal seeks to redevelop the existing Legion lands with new development. The new building is proposed to get closer to Maple Avenue (from 12.7

metres (41.7 feet) to 7.7 metres (25.3 feet)), which will reduce the available area in front of the building for events.

Area B: The main concentration of new development is expected in this area. Parking should be integrated into the building wherever possible. The site's grading makes this an efficient option. If at grade exterior parking is provided, it should be designed like a pedestrian-friendly mews. Enclosed at grade parking areas facing Mill Street should be sleeved with active uses or otherwise activated or beautified. Buildings should be a minimum of 3 storeys.

Staff comment: The main concentration of the proposed development is expected in this area as envisioned and parking is proposed, albeit deficient per Township parking standards. The proposed development exceeds 3 storeys, aligning with the CIP in this respect. An evaluation of the proposed building height is provided below.

Area C: Provide a landscaped amenity area/walkway through this area. If at grade parking is provided, it should be designed like a pedestrian-friendly mews.

Staff comment: An area which appears to be open space is shown on the submitted site plan for this area, accompanied by some proposed parking.

Access: Main vehicular access should be provided from Mill Street, with an additional access from Maple Avenue. A pedestrian connection should be provided from Mill Street to Maple Avenue.

Staff comment: Access to the residential component of the proposal appears to be from Mill Street, however access to the Legion component of the proposal appears to be from Maple Avenue. Pedestrian access is not labelled on the submitted plan. These details would be reviewed during the site plan control process.

Landscape: At grade parking areas should be landscaped.

Staff comment: It is likely that these details would be shown during the Site Plan Control process.

Official Plan Amendment – OPA-67

Redesignation from Urban Centre – Institutional to Urban Centre – Urban Residential

The applicant is proposing to redesignate the subject lands from Urban Centre – Institutional to Urban Centre – Urban Residential. The purpose and effect of this redesignation is to reflect the high-density residential nature of the proposed development. Township staff have no concerns with the proposed redesignation. In making this determination, key considerations include:

- Per Schedule B2, the subject lands are located within the Urban Centre – Institutional Designation of the Township's 2023 Official Plan (see Figure 5). Section I4.4 of the Township's 2023 Official Plan directs that lands located within

the Urban Centre – Institutional Designation shall be utilized for community centres and areas, day nurseries, EV charging stations, hospitals, long-term care facilities, open space uses, places of worship and other institutional uses and public service facilities.

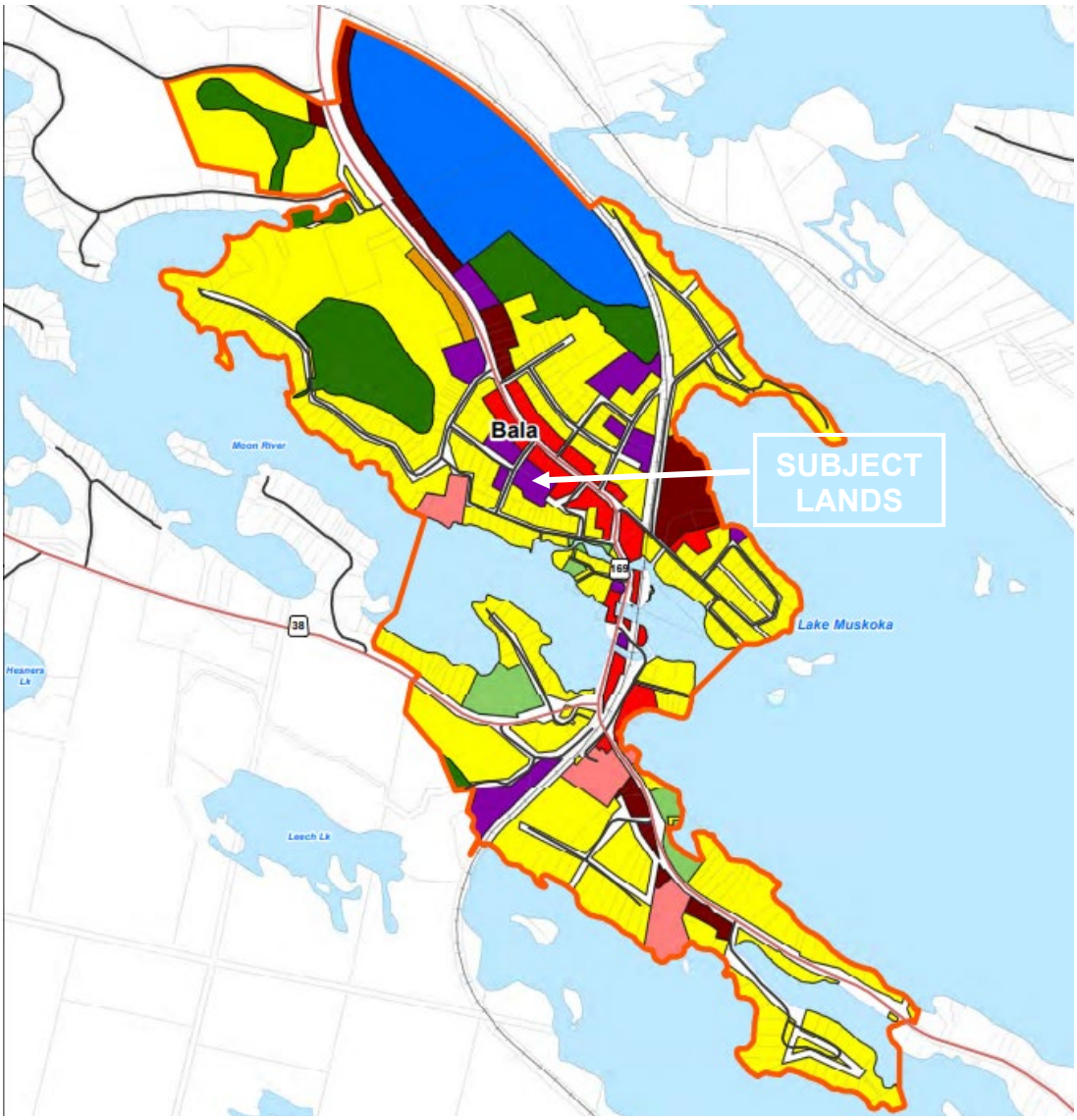


Figure 5: Schedule B2: Bala Land Use of the Township's 2023 Official Plan.

The applications seek to construct a 4-storey mixed use building comprised of 128 residential units, legion facilities and a medical clinic. These uses are more compatible with the uses permitted on lands within the Urban Centre – Urban Residential Designation, as outlined in Section I4.1.1, which permits residential dwellings (low, medium and high density), public service facilities, and recreational and/or other cultural services, to name a few.

- Per Section I1.1 of the Township's 2023 Official Plan, the objectives of the Plan are, in part, to support the efficient use of land and infrastructure in Urban Centres

to meet the needs of present and future residents and businesses; to ensure that an adequate supply of land and housing choices are available in the Urban Centres for present and future residents of all ages, abilities, incomes, and household sizes; provide for more live-work opportunities by promoting residential uses in proximity to compatible forms of development, employment uses, institutional uses, recreational facilities and parks; and promote a variety of complementary and compatible land uses including attainable housing, special needs and transitional housing, community facilities, schools, small-scale commercial uses and recreational open space areas. Staff have undertaken a review of Schedule B2: Bala Land Use of the Township's 2023 Official Plan. Eleven other properties aside from the subject lands are currently designated Institutional in Bala. The removal of the subject lands from this designation would not eliminate such a use from the Urban Centre of Bala, which is important.

Section L7 of the Township's Official Plan speaks further to the need for housing. Section L7.2 d) states that the overall housing mix target in the two urban centres (Bala and Port Carling) is 80% low density, 15% medium density and 5% high density. There is currently little to no medium or high-density residential development. The proposed development would help to achieve these targets.

Section I3.1 of the Township's 2023 Official Plan speaks to the long-term vision for Bala, specifically. Per I3.1 b), infilling within the existing community shall be required to fully utilize serviced land areas. Residential conversions shall be allowed provided adequate servicing can be provided.

- Given that this is an Official Plan Amendment application, it will require adoption by Township Council and approval by District Council.

Section I2.3.2.1 h) – Urban Centre Land Use Designations – Urban Design – Policies – Private Realm – Residential Site and Building Design

The applicant is proposing to construct a building which exceeds the maximum height stipulated in Official Plan policy I2.3.2.1 h). Township staff have concerns with the proposed height and recommend that it be reduced to match the existing site-specific approval. In making this determination, key considerations include:

- The policy which the applicant is requesting to be amended reads as follows:

  "New mid-rise residential development that has a maximum height of 4 storeys and 14 metres may be permitted provided it:

  i. Is compatible with adjacent residential neighbourhoods;

  ii. Will not cause traffic hazards or an unacceptable level of congestion on surrounding roads;

  iii. Is located in proximity to **public service facilities**, such as parks, schools and open spaces;

iv. Is located on a site that has adequate land area to incorporate the building, on-site parking, an outdoor amenity area, and appropriate buffering such as setbacks, landscaping and fencing to ensure the compatibility of the use with adjacent properties;

v. Takes advantage, where appropriate, of the topography and natural vegetation of the site and area in minimizing the impacts of mid-rise buildings on adjacent land uses; and,

vi. Is demonstrated that the potential shadow impacts associated with mid-rise buildings will be at an acceptable level on adjacent properties."

The applicant is proposing to amend this policy by replacing the words "14 metres (46 ft)" with "22 metres (72 feet)". The proposed development is described within the submitted materials as a 4-storey building, proposed to be 22 metres (72 feet) in height. The proposed height represents an increase of 26 feet or 36% over what this Official Plan policy envisions. See elevation drawings as shown in Figures 6 and 7.



Figure 6: Submitted north and south facing elevation drawings.



Figure 7: Submitted east and west facing elevation drawings.

- The application seeks to amend the numerical extent of height permitted for development within Section I2.3.2.1 h). The criteria within said policy to consider height is still applicable. In this respect, staff provide the following comments:

    - "Is compatible with adjacent residential neighbourhoods": heights in the adjacent neighbourhood do not appear to be compatible with the proposed height of 72 feet. Residential development in the neighbourhood is limited in height to a maximum of 35 feet per the Township's Zoning By-law, most of which do not extend to this permission (see Figures 8 and 9). Commercial development in the area (along Muskoka Rd 169) is largely permitted a maximum of 40 feet in height. The existing arena which directly abuts the subject lands to the north is approximately 25 feet in height (see Figure 10). The existing community centre and library, which is located adjacent to the subject lands to the northwest is approximately 20-25 feet in height (see Figure 11).

    - "Will not cause traffic hazards or an unacceptable level of congestion on surrounding roads": The submitted TIB indicates conformity with this provision. Prior to Operational Services concurring with the assessment, they have requested that the document be peer reviewed, as detailed above.

    - "Is located in proximity to public service facilities, such as parks, schools and open spaces": the subject lands are located in close proximity to the

Bala Community Centre and Library, the Bala Arena, and within walking distance of the Bala Sports Park and Jaspen Park.

- "Is located on a site that has adequate land area to incorporate the building, on-site parking, an outdoor amenity area, and appropriate buffering such as setbacks, landscaping and fencing to ensure the compatibility of the use with adjacent properties": exemptions from density, height, parking requirements, landscaped area, etc. have been requested, demonstrating that the site may not have adequate area to support the specific design proposed. An outdoor amenity area has not been demonstrated at this stage of design. The proposal complies with required setbacks.

- "Takes advantage, where appropriate, of the topography and natural vegetation of the site and area in minimizing the impacts of mid-rise buildings on adjacent land uses": The subject lands are relatively flat, minimizing the amount of site alteration works anticipated to be required. The vegetation surrounding the lands will be helpful in mitigating the impacts of the proposed buildings (for the portion below the tree canopy), however the subject property itself has limited vegetation.

- "Is demonstrated that the potential shadow impacts associated with mid-rise buildings will be at an acceptable level on adjacent properties": potential shadow impacts have not been evaluated and accordingly, staff do not know the potential impacts of shadows. The proposed building height is such that significant shadows may be present, and these shadows may impact the surrounding lands.



Figure 8: Example of existing residential development on Mill Street.



Figure 9: Example of existing residential development on Maple Avenue.



Figure 10: Photo depicting existing Bala Arena building height (approx. 25 ft.).



Figure 11: Photo depicting existing Bala Community Centre/Library building height (approx. 20-25 ft.).

- Section I1.1 c) of the Township's 2023 Official Plan states that it is the objective of this Plan to support and foster the unique characteristics of the Urban Centres by ensuring that new development reflects the existing small-town character of the two Urban Centres; is compatible with the surrounding built environment; and protects existing neighbourhoods and subdivisions.

  Section I1.2 of the Township's 2023 Official Plan states, in part, that it is the intent of this Plan to support excellence in community living based on the application of the following principles that result in an attractive built form of appropriate building heights, massing, setbacks, streetscapes, gateways and architectural treatments.

  Section I2.3.2.1 a) of the Township's 2023 Official Plan states that building height and massing shall correspond to the specific site characteristics and contribute to the overall context of the neighbourhood.

  Section I4.1.2.3 a) of the Township's 2023 Official Plan states, in part, that where high-density development is proposed in the Urban Residential designation, high density residential development generally consists of low-profile walk-up apartments or condominiums.

Section I4.1.2.3 g) of the Township's 2023 Official Plan states, in part, that the permitted height of any high-density structure shall be appropriate to the intensity of the development and shall not exceed the tree canopy.

Staff have concerns that the proposed height, being 72 feet, would not conform to the above noted policies. Maple Avenue and Mill Street, the surrounding road networks, exhibit development synonymous with a small-town, meaning low-profile, non-imposing development surrounded by significant landscaping and vegetation which buffers the impacts of development. The proposed 72-foot-tall building is not "low profile" when looking at the greater picture of Bala as a community. In a large city such as Toronto, a 72-foot-tall building may be considered mid-rise or low profile. However, in the context of Muskoka and more specifically, Bala, this height would be considered high-rise and high profile, as it would be the tallest building in the Urban Centre. It is anticipated that the proposed height would be highly visible from Muskoka Rd 169.

The average tree canopy in the area is estimated to be approximately 30-40 feet in height. The proposed height of 72 feet would well exceed the tree canopy. There are two conifers located on the east side of the subject lands which may help to soften the proposed development (see Figure 12). However, the proposed building will be getting closer to Maple Avenue and the applicants' agent has stated that although they will try to keep the trees, the building may impact the tree roots, so they cannot guarantee that they will remain.



Figure 12: Two identified trees that would help to visually buffer the development, however, the applicant cannot guarantee that they will remain.

- Section I4.2.2.2 of the Township's Official Plan speaks to minimum and maximum heights permitted within the Urban Centre – Core Commercial designation. Section I4.2.2.2 a) states, in part, that the maximum height for new buildings is three storeys. While the subject lands are not located within the Core Commercial designation, this limitation provides context with respect to the intended character and height envisioned in the urban centre as this designation typically contains the highest density and intensity of development. Section I4.2.2.2 b) continues to state that greater heights (up to four storeys) may be permitted provided that they are setback from the street or tiered in height to minimize their visual and shadowing impact on the streets and public areas.

- The CBO has advised that typical floor to ceiling height is 8-10 feet, plus 1-2 feet for the floor structure itself. Accordingly, a typical "storey" is between 9-12 feet in height. Applying these standards, the proposed building being 72 feet could accommodate 6-8 storeys of development. In reviewing the elevation drawings, it appears that most of the building will exhibit a 6-storey design, rather than the stated 4, with a lower parking storey and an upper mechanical storey.

- The existing site-specific By-law 2017-104 permits a maximum height of 55 feet for a design which also proposed 128 residential units (as part of a retirement home). A revised proposal which more closely resembles the height of this previous approval would be closer to conformity with applicable policies.

Section I4.1.2.3 e) – Urban Centre Land Use Designations – Land use Designations – Urban Residential – Development Policies – High Density

The applicant is proposing to construct a building which exceeds the maximum density stipulated in Official Plan policy I4.1.2.3 e). Township staff have concerns with the requested amendment. In making this determination, key considerations include:

- The policy which the applicant is requesting to be amended reads as follows:

  "High density development shall not exceed 70 units per gross hectare".

  The applicant is proposing to amend this policy by replacing the number 70 with 170, which will result in an increase in density of units per gross hectare of 100, or 243% over what is permitted through the Official Plan.

- Section I1.1 b) of the Township's 2023 Official Plan states that it is the objective of this Plan to support increases in density in new development areas to maximize the use of infrastructure and minimize the amount of land required for new development, provided the character of each of the Urban Centres is respected.

  Section I1.1 c) of the Township's 2023 Official Plan states that it is the objective of this Plan to support and foster the unique characteristics of the Urban Centres by ensuring that new development: reflects the existing small town character of the

two Urban Centres; is compatible with the surrounding built environment; and protects existing neighbourhoods and subdivisions.

Section I2.2 b) and h) of the Township's 2023 Official Plan states, that to achieve and sustain well-designed and harmonious built form within the Urban Centres, it is the intent of this Plan to: maintain and enhance the character and stability of existing and well-established residential neighbourhoods by ensuring that development and redevelopment is compatible with the scale and density of existing development; and address and achieve a high degree of compatibility and integration between new and existing development.

As detailed in the analysis above, staff question whether the proposed development is in keeping with the small town character of the area. The implications of the proposed density can be seen in the deficiencies in other aspects of the zoning by-law, such as lot coverage, height and parking requirements. Staff would recommend that the density be reduced to be brought into closer conformity with the Official Plan.

- While the proposed density exceeds what the Official Plan envisions through this policy, staff do recognize that the existing approval (site-specific By-law 2017-104) permits a development of a very similar density, but for a different use (i.e.: retirement home vs. dwelling units). The previous site-specific approval did not require an Official Plan Amendment because the type of use, being Institutional, is not limited by a density cap. However, the two uses are different and are not in staff's opinion comparable in terms of intensity of use, parking needs, vehicle movements to and from the site, etc. Retirement home units are generally occupied by one individual, whereas the proposed dwelling units could be occupied by multiple individuals per unit. By nature, retirement home parking is generally intended for staff and visitors and residents are not coming and going at the same rate as those of dwelling units, lessening the impact on traffic and intensity of use.

Zoning By-law Amendment Application ZBA-22/26

Proposed Rezoning – Institutional – Holding (I-H) to Community Residential – Multiple Residential High Density – Holding (RM2-H)

The applicant is proposing to rezone the lands to facilitate the proposed multi-use building containing 128 residential dwelling units, legion facilities and a medical clinic. Staff have no concerns with the proposed RM2-H Zone itself, however, have concerns with the specific density, height and parking proposed. In making this determination, key considerations include the following:

- The subject lands are currently zoned Institutional (I) which is appropriate for the existing designation of the lands (Urban Centre - Institutional) and permits uses endorsed by the policies within the Institutional sub-designation, such as community centres, long-term care facilities, etc. The existing zoning is not suitable

for the redesignation of the lands (detailed above) and the proposed mixed-use building. The applicant proposes to rezone the subject lands to Community Residential – Urban Centres – Multiple Residential High Density (RM2) Sewer and Water to reflect the proposed development. Staff have no concerns with the proposal to rezone the lands and agree that the RM2 zone is appropriate, however, staff do have concerns with the specifics of the proposal related to height, density and parking (which are described in greater detail above and below).

- As described above, a Holding (-H) provision is proposed instead of requiring that items be fully addressed and completed prior to a decision being made by Council. The circulated By-law was drafted to incorporate necessary items to be addressed prior to the Hold being lifted, which encompass Township and District requirements, including:

    I. Hydraulic modelling has been completed and the results incorporated into the Functional Servicing report to the satisfaction of the District Municipality of Muskoka;

    II. The applicant has entered into an agreement with the District Municipality of Muskoka respecting the provision of municipal water and sewer services and related capacity allocation, including the provision of securities, if necessary;

    III. The Transportation Impact Brief, prepared by Tatham Engineering and dated April 23, 2026, has been peer reviewed to the satisfaction of the Township and the District of Muskoka;

    IV. The Parking Justification Study, prepared by Tatham Engineering and dated April 23, 2026, has been peer reviewed to the satisfaction of the Township;

    V. The Functional Servicing Report, prepared by Pinestone Engineering Ltd. and dated April 23, 2026, has been peer reviewed to the satisfaction of the Township and the District of Muskoka;

    VI. That any findings of the peer reviews be addressed and/or implemented to the satisfaction of the Township and the District of Muskoka;

    VII. The subject lands be required to obtain site plan approval and that a satisfactory Site Plan Agreement be entered into and registered on title, along with securities, for matters including but are not limited to, implementation of the recommendations of the technical studies to the satisfaction of the Township and the District Municipality of Muskoka; and

    VIII. That the necessary parking be provided or agreements secured and executed to address the parking requirements to the satisfaction of the Township.

- Staff recommend that a few revisions be made to the above cited provisions in the

draft By-law, as follows:

- That item IV noted above be revised to state that the Parking Justification Report be updated to address staff comments. Staff are of the opinion that an in-house review is sufficient and that it does not need to be peer reviewed, lessening the costs to the applicant; and

- That item VII noted above, which requires the passing of a Site Plan Control By-law, be removed. The subject lands and the proposal are automatically subject to the Site Plan Control process.

Exemptions A & B – Minimum Number of Required Parking Spaces and Minimum Number of Barrier Free Parking Spaces

Staff have concerns with Exemption A, being an exemption from the minimum number of required parking spaces. In making this determination, key considerations include:

- As previously noted, Section I2.3.2.1 of the Township's 2023 Official Plan states, in part, that new mid-rise residential development that has a maximum height of 4 storeys and 14 metres may be permitted provided it is located on a site that has adequate land area to incorporate on-site parking. The proposal seeks to permit a minimum of 56 parking spaces, 5 of which will be barrier free. Per Section 3.28 of Comprehensive Zoning By-law 2014-14, the required number of parking spaces is as follows:

  - Apartment Dwelling (1.75 spaces/unit + 1 space/2 units) = 228 spaces

  - Office (1 space per 322.9 sq. ft.) = 1 space

  - Medical Clinic (5 space per practitioner) = 5 spaces

  - Restaurant (1 space per 215.3 sq. ft.) = 21 spaces

  - Service Club (1 space per 215.3 sq. ft.) = 7 spaces

  The total number of required parking spaces is 262. The applicant is proposing 56 spaces, which results in a deficiency of 206 spaces.

- Staff are aware that the applicant is exploring alternative measures to secure additional parking for the proposal, as detailed above. However, until more information is provided on these alternatives, staff must evaluate the proposal against its current form. Further, if any spaces are proposed to be utilized on lands that are not in the ownership of the Royal Canadian Legion, relief from Section 3.28 c) of the Township's Zoning By-law 2014-14 may be required.

- As detailed above, staff have raised some concerns and questions surrounding the

submitted Parking Justification Report and a response has yet to be received.

- The Planning Justification Report indicates that a number of the proposed units (approx. 33% or 42 units) are proposed to be affordable or attainable. Per Section L7.1 of the Township's 2023 Official Plan, creative and innovative approaches to the provision of attainable housing may be considered, including alternative development standards and forms of housing provided the other objectives of this Plan can be achieved. In this regard, alternative development standards may include (but are not limited to) reduced parking standards. Further, the Official Plan encourages that through the Comprehensive Zoning By-law update that standards that may be impediments to the development of attainable housing should be considered for change to support more housing. The proposal to include attainable units is beneficial to the Township, however staff are cognizant that there are limited means to ensure that the units remain affordable as defined by Canada Mortgage and Housing Corporation (CMHC).

- In staff's opinion, a minimum of 1 parking space per residential unit should be provided considering that there is no public transit in Bala. Additional spaces should also be secured to accommodate the proposed legion and medical clinic uses. It is noted that the Parking Justification Study did not consider these uses.

- The proposed number of barrier free spaces is more in line with the requirements of the Township's Official Plan, being deficient by 6. However, in recognition of the proposed uses and that the PJR states that 20% of units (approx. 26 units) will be accessible, staff would prefer an increase to the number of barrier free spaces, which can be reviewed further at the time of site plan approval.

- Staff note as per the staff report associated with the previously approved By-law (2017-104), 102 parking spaces were proposed on site as part of that previous proposal.

Exemption C – Maximum Lot Coverage

Staff do not have concerns with Exemption C, being an exemption from the maximum permitted lot coverage. In making this determination, key considerations include:

- Section I4.1.2.3 d) of the Township's 2023 Official Plan states, in part, that where high density development is proposed in the Urban Residential designation, high density residential development shall have regard for sites that are well suited to a low building coverage and higher density because of the physical attributes of the site.

- Previous site-specific By-law 2017-104 permits a lot coverage of 67% for a retirement home. The proposal today seeks to permit a lot coverage of 45%, which is 22% less than this previous approval. However, staff have written to the agent to confirm these values and have not yet received a response. Pending their response, the proposed

lot coverage may be subject to change. Staff have no concerns with the approval of this exemption.

Exemptions D & E – Maximum Building Height & Maximum Number of Storeys for an Apartment Dwelling

Staff have concerns with Exemptions D, and recommend that Exemption E be revised, being exemptions from the maximum permitted building height and maximum number of storeys for an apartment dwelling. In making this determination, key considerations include the analysis of the proposed Official Plan Amendment to Section I2.3.2.1 h) (detailed above), and the following:

- Section I4.1.2.3 of the Township's 2023 Official Plan states, in part, that the permitted height of any high-density structure shall be appropriate to the intensity of the development and shall not exceed the tree canopy. Height limitations are generally implemented, in part, to ensure compatibility, to maintain the character of the surrounding area and an appropriate balance of built form, and to ensure that the height of a building is appropriate to its terrain and setting. The proposed building would exceed the existing tree canopy and would not be in character with the surrounding area.

- Site-specific By-law 2017-104 permits a maximum height of 55 feet, which is greater than the height permitted in the RM2 zone as-of-right (35 feet). Staff recommend that the applicant revise the proposal to be more in compliance with the site-specific approval.

- As defined in Comprehensive Zoning By-law 2014-14, the proposed development exceeds 4 storeys contrary to the submitted materials indicating such. The Township's Comprehensive Zoning By-law does not currently restrict the number of storeys (opting instead to regulate height). Staff are not opposed to a self-imposed restriction such as this; however, staff are of the opinion that the number of storeys needs to be revised to reflect the actual proposal at hand. If Committee is considering approval of the application, a revision would be required to recognize that the proposal seeks to permit 6 storeys instead of 4.

Exemption F – Minimum Required Landscaped Area

Staff have no concerns with the requested exemption, being an exemption from the minimum required landscaped area. In making this determination, key considerations include:

- Per Section I2.3.2.5 of the Township's 2023 Official Plan, the Township shall require that landscaping be an integral component of all new development on vacant lots and the redevelopment of existing uses. In this regard, existing trees and established vegetation should be retained and enhanced to improve the visual appearance of the site and to minimize the impacts of the development on adjacent uses. Some

landscaping features are shown on the submitted site plan, including some areas toward Maple Avenue, some areas along the south side of the proposed building, and some green roof spaces. However, details are anticipated to be flushed out at the site plan control stage. Given the scale of the proposed development, meeting the required 35% is challenging. The PJR indicates that the actual proposed landscaped area is 27%. However, the applicant has requested that 25% be enshrined through the By-law to allow some wiggle room. Staff would note that it is important that this number align with the stormwater management quality control comments raised earlier in this report and that the number should align with the amount of parking provided on site as it has been noted that the applicant is trying to provide further parking on site.

- Section I2.3.2.5 further states that it is recognized that the provision of additional landscaping may not be feasible when lots are redeveloped and/or when existing uses are expanded. This may be true particularly if the landscaping potentially limits the amount of development that could occur and/or is not feasible given building and parking area location. In these cases, the focus of the Township shall be on the enhancement of the streetscape by the addition of landscaping between the building and the public road and the parking areas adjacent to the public road. These details can be refined through the site plan control process.

Exemption G – Density of Development

Staff have concerns with the requested exemption, being an exemption from the maximum density of development. In making this determination, key consideration include the analysis of the proposed Official Plan Amendment to Section I4.1.2.3 e) (detailed above) and the following:

- As per the PJR, the actual requested density of development is 166 units/gross hectare. However, the agent has requested that the numerical value put into the by-law be 170 units/gross hectare to allow some room for change. This is not an uncommon approach.

  While the Township's Official Plan includes many policies which encourage the development of additional housing, the scale of the proposal is simply not in conformity with development standards as set out in the Official Plan and it would not be in keeping with the character of the area. Staff recommend that the scale of the proposal be lessened to better align with Official Plan policies.

Exemption H – Repeal Site-Specific By-law 2017-104

Staff have no concerns with the requested exemption to repeal site-specific By-law 2017-104. In making this determination, key considerations include:

- As previously detailed, Zoning By-law Amendment Application ZBA-42/17, was approved by Council on October 13, 2017, through By-law 2017-104. This

approval permitted the development of a 4-storey retirement home building attached to the existing Legion building. This plan for development is no longer proposed, and the approval unnecessary. Staff have no concerns with the By-law being repealed.

Exemption I – Restricting Permitted Uses within the RM2 Zone

Staff have no concerns with the requested exemption to restrict the permitted uses within the RM2 Zone. In making this determination, key considerations include the following:

- The Community Residential – Urban Centres – Multiple Residential High Density (RM2) Sewer and Water Zone permits a number of uses, including: Residential – Converted Dwelling, Residential – Duplex Dwelling, Residential – Semi Detached Dwelling, Residential Townhouse, Residential Apartment Dwelling, Group Home, Senior Citizen Home and Rooming House. To provide Council with a level of certainty given the scale of the proposal, the exemption seeks to restrict the permitted uses to only a Residential Apartment Dwelling (permitted as-of-right within the RM2 Zone) and a Service Club (Bala Legion), which is not currently permitted within the RM2 Zone. As noted above, the Urban Residential sub-designation envisions this type of use. Staff have no concerns.

Alternatives

Staff recommend a deferral, as noted in the recommendation block, for those reasons outlined above.

Nonetheless, should Planning Committee wish to render a decision today, staff would recommend the following based on information received to date:

OPA-67

THAT Official Plan Amendment Application OPA-67 (ROYAL CANADIAN LEGION) be ADOPTED, in part, by the Township through the approval of By-law 2026-XXX and the record be forwarded to the District Municipality of Muskoka for approval;

AND THAT the request to amend Sections I2.3.2.1 and I4.1.2.3 NOT BE ADOPTED, and that the By-law to adopt OPA-67 be revised accordingly.

ZBA-22/26

THAT Zoning By-law Amendment Application ZBA-22/26 (ROYAL CANADIAN LEGION), be APPROVED, in part, subject to the following:

- That revisions be made to the draft By-law to:

    I. Remove approval of the requested 56 parking spaces;

II. Reflect a building that is 6 storeys in height, not 4;

III. That Section 2 d) be amended to state that that the Parking Justification Report be updated to address staff comments instead of being peer reviewed; and

IV. That Section 2 g), being that the lands receive site plan approval prior to the lifting of the Holding (-H) provision) be removed.

AND THAT Exemption D to permit a maximum building height of 22 metres be DENIED and the draft By-law and schedules revised accordingly.

Alternatively, Planning Committee can choose to approve or deny the applications as submitted.

General Analysis

Site visit photos, property constraints and past planning approvals, and especially relevant planning policies are included in an appendix to this report.

PREPARATION

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APPENDIX

A1: Property Constraints, and Background

Matter	Comment
Species at Risk (SAR)	SAR may be encountered in the area. More information regarding SAR can be found at www.ontario.ca/SpeciesAtRisk. Property owners should consult the Ministry of the Environment Conservation, and Parks (MECP) to ensure any proposed development will not have any adverse impacts on SAR or SAR habitat. Given the applicant's statutory obligations under the *Endangered Species Act, 2007*, an evaluation of potential habitat of endangered and threatened species and impacts has not been completed, however, one can be requested by Committee if desired. Staff would note that the subject lands are largely flat and open, and little tree removal or site alteration is anticipated.

A2: Site Visit Photos – June 2, 2026



Figure 13: View of Maple Avenue from Muskoka Rd 169 Intersection.



Figure 14: View of Maple Avenue south of the Bala Legion.



Figure 15: Existing front yard area between the Bala Legion building and Maple Avenue.



Figure 16: Area behind the existing Bala Legion building (left) and Bala Arena building (right).



Figure 17: Existing laneway from Mill Street to the subject lands.

A3: Agency and Public Comments Submitted at Report Writing

Submission	No Objection	Objection	Comments
District Municipality of Muskoka	✓		District staff would not be opposed to the approval of the applications.
Township of Muskoka Lakes,	✓		No Objection. Based on the drawings provided it appears

Development Services Division			the OBC will consider this building a 5 storey building with a mechanical penthouse (which is not considered a storey if used only for mechanical, stairs, elevator and/or service room. This is based on the materials provided and the building code regulations. As with any planning application, full building code compliant plans are not available, and analysis cannot be completed; but, I provide the following comments in an effort to avoid delays or required amendments in the future. My comments are as follows: 1. A Fire Access Route has been identified, but fails to identify the: Access Route dimensions (width, turn radius, etc.), hydrant & fire connection locations, Please identify these dimensions in compliance with OBC Div. B, 3.2.5.5. & 3.2.5.6. 2. Spatial separation requirements & setbacks from property lines will be evaluated at time of building permit application. I also note that the tables on the drawings do not reflect 4 storeys of the same footprint and same unit layout. Additionally, based on the table, inadequate barrier-free parking, and parking in general, has been identified on the property. If my math is correct, 228 spots for the apartment building and aprox. 40 for the legion/restaurant. Only 1 BF spot has been indicated on-site.
Township of Muskoka Lakes, Operational Services			Operational services is recommending that the TIS and SWM portion of the FSR undergo a peer review process to ensure there are no concerns from an Operational perspective. The Township recommends that the SWM plan is refined further to include an external drainage area plan to ensure that infrastructure is adequately sized to convey

			flows. Downstream Infrastructure should be evaluated and confirmed to be in adequate condition to support the flows conveyed by the development. Detailed storage information should be provided in the report, further information and calculations on how storage requirements will be achieved are recommended for inclusion within the report. Commercial Entrances will be required to be obtained through the Township's entrance permit process. The proposed entrance onto Mill Street appears to want to utilize a portion of Unopened Road Allowance to traverse to the street. Further discussion on the use of the Road Allowance may be required.
Township of Muskoka Lakes, Emergency Services	✓		The Muskoka Lakes Fire Department has reviewed the submitted materials for the proposed redevelopment of the Royal Canadian Legion – Branch 424 property consisting of a four-storey mixed-use residential and commercial building. Based on the information provided, the proposed development will be required to comply with the current Ontario Building Code (OBC), Ontario Fire Code (OFC), and all applicable National Fire Protection Association (NFPA) standards at the time of building permit application and construction. At this stage of the planning application process, the Fire Department offers the following comments and considerations: The proposed four-storey mixed-use building containing residential occupancies, assembly occupancy (Legion), and business/personal service occupancy (medical clinic) will require detailed life safety design review under the Ontario Building Code, including but not limited to: Building construction and fire-resistance

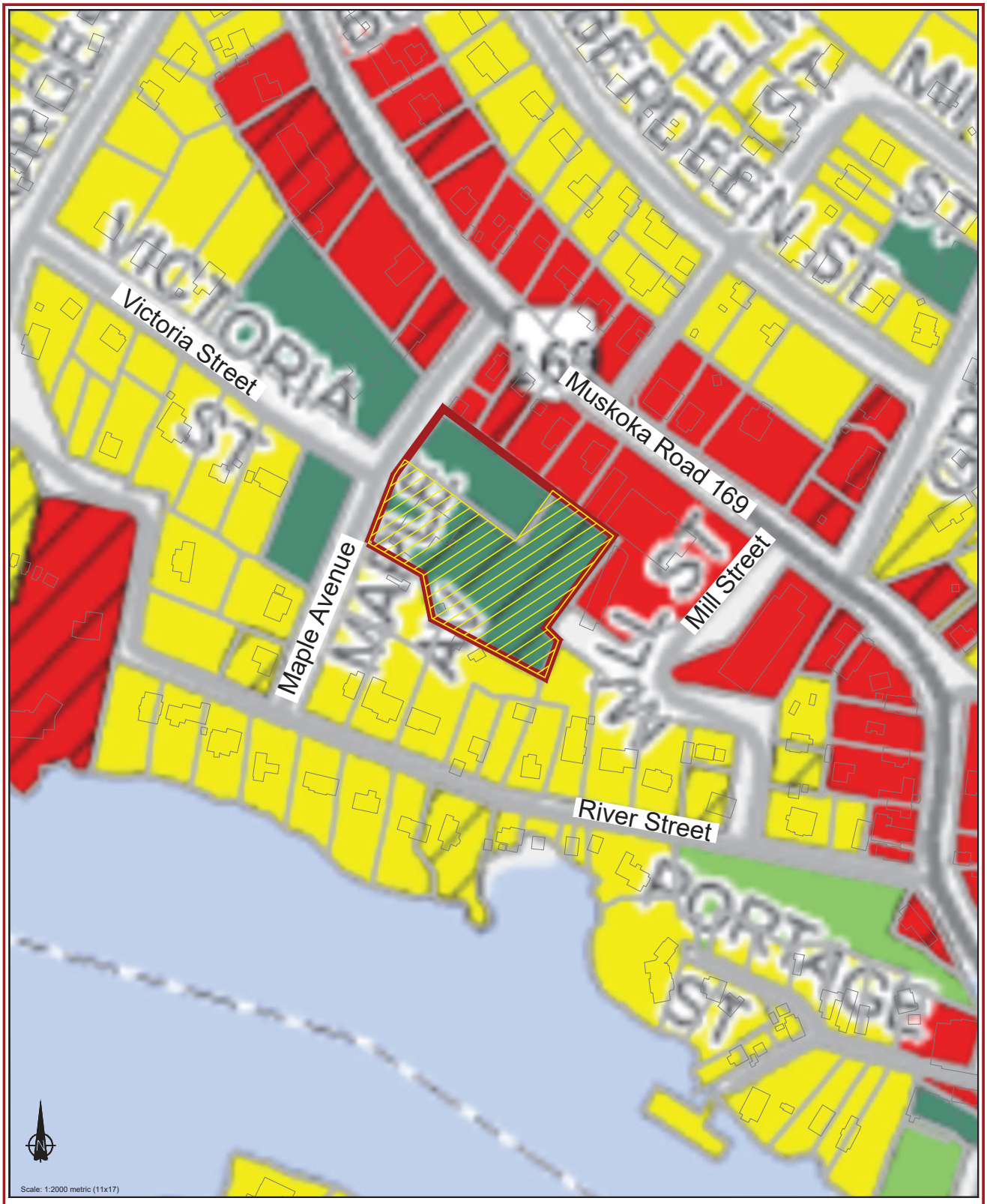
			ratings; Occupancy separations; Fire alarm and detection systems; Automatic sprinkler protection; Standpipe systems where required; Means of egress and emergency lighting; Fire department access; Barrier-free accessibility requirements; Smoke control and fire separations; and Emergency power systems where applicable. The proposed residential density and building height may require enhanced fire protection systems and adequate fire department access routes in accordance with Division B of the Ontario Building Code and applicable NFPA standards. A Fire Access Route meeting Ontario Building Code requirements must be maintained for fire department apparatus. Turning radii, overhead clearances, load-bearing capacities, and proximity to fire department connections shall be reviewed during the Site Plan and Building Permit stages. Adequate municipal water supply and fire flow for firefighting purposes must be confirmed to the satisfaction of the Township and Fire Department. Hydrant locations and spacing shall comply with applicable municipal standards and fire protection requirements. The proposed mixed-use occupancy will require appropriate fire separations between the residential, assembly, and medical clinic portions of the building in accordance with the Ontario Building Code. The Fire Department recommends that a detailed Code Compliance Review, including occupant load calculations, fire protection systems design, and emergency access provisions, be completed at the Building Permit stage by qualified design professionals. Any required approvals from the Chief Building Official, Fire Department, and

			other applicable agencies shall be obtained prior to construction. Based on the information currently available, the Fire Department has no objection to the application proceeding through the planning process, subject to compliance with all applicable Ontario Building Code, Ontario Fire Code, NFPA standards, municipal requirements, and conditions that may arise through detailed design and building permit review.
Township of Muskoka Lakes, Legislative Services		✓	Staff have concerns with the usage of Township lands to accommodate parking for this proposal. Staff note that the Township lot is currently used for parking for the Township's Bala Community Centre and Bala Arena that is located across the road.
Public Comments:			
Joe Zaal	✓		Letter of support.
Marie Zaal	✓		Letter of support.
Scott and Janine Vickers	✓		Letter of support.
Sylvia Sauro	✓		Letter of support.
Allan Turnbull	✓		Letter of support.
Marcia Rempel	✓		Letter of support.
Mary Grady	✓		Letter of support.
Peter Kenny	✓		Letter of support.
Ted Farley	✓		Letter of support.

A5: Planning Policy

Provincial Planning Statement
The Provincial Planning Statement, 2024 (PPS) provides policy direction on matters of provincial interest related to land use planning and development. The subject lands are identified as a Settlement Area in the PPS, and the applications are consistent with the applicable policies in the PPS.
District of Muskoka Official Plan
The subject lands are with the Urban Centre Boundary of Bala and designated Full Service Area in the District of Muskoka Official Plan. Comments from the District were received stating no objection to the applications.

Township of Muskoka Lakes Official Plan (Approved November 20, 2023)
The Township's 2023 Official Plan designates the subject property as Urban Centres and it is the opinion of staff that parts of the applications conform to the Official Plan subject to the recommendations, and parts do not.



ZONING SKETCH

SUBJECT LANDS

LANDS TO BE REZONED FROM INSTITUTIONAL (I) - EXEMPTION (87-1781) TO MULTIPLE RESIDENTIAL HIGH DENSITY - EXCEPTION (RM2-XX) - SEWER AND WATER

COMMUNITY COMMERCIAL (C)

COMMUNITY RESIDENTIAL (R)

INSTITUTIONAL (I)

OPEN SPACE (OS)

THIS IS SCHEDULE 'A' TO THE ZONING BY-LAW AMENDMENT NO._____PASSED THIS _____DAY OF _____, 2026.

MAYOR _____

CLERK _____

NOT TO SCALE

SITE PLAN

The Royal Canadian Legion, Bala, located at 1011 Maple Avenue on Lake Muskoka, has served as a community hub since its founding in 1946. Established by returning Second World War veterans, it now welcomes both veterans and non-veterans, offering support services, meals, concerts, games, and hall rentals. Beyond its role as a gathering place, the Legion contributes to the community through charitable programs such as Meals on Wheels and Christmas hampers, maintaining its reputation as a warm and welcoming centre of Bala life.



NOT TO SCALE

LEGEND

- LEGION ENTRANCE
- RESIDENTIAL/ PARKING ENTRANCE
- LOADING

WZMH

SITE PLAN

The Royal Canadian Legion, Bala, located at 1011 Maple Avenue on Lake Muskoka, has served as a community hub since its founding in 1946. Established by returning Second World War veterans, it now welcomes both veterans and non-veterans, offering support services, meals, concerts, games, and hall rentals. Beyond its role as a gathering place, the Legion contributes to the community through charitable programs such as Meals on Wheels and Christmas hampers, maintaining its reputation as a warm and welcoming centre of Bala life.



LEGEND

- LEGION ENTRANCE
- RESIDENTIAL/ PARKING ENTRANCE
- LOADING

WZMH

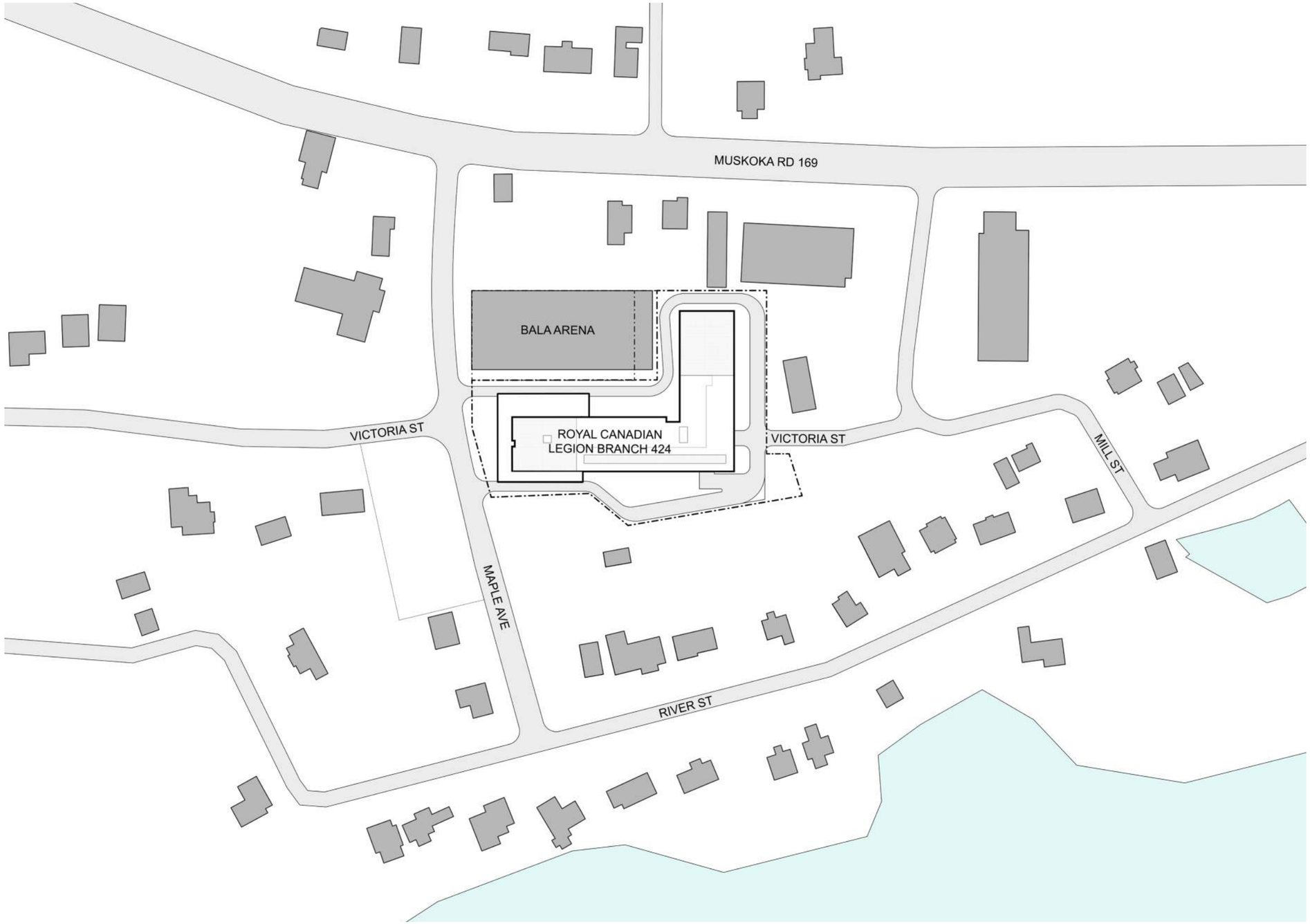
ROYAL CANADIAN LEGION

BALA LEGION HERITAGE MANOR

1011 MAPLE AVE. BALA

WZMH

CONTEXT PLAN



1:1200

WZMH

SITE PLAN

The Royal Canadian Legion, Bala, located at 1011 Maple Avenue on Lake Muskoka, has served as a community hub since its founding in 1946. Established by returning Second World War veterans, it now welcomes both veterans and non-veterans, offering support services, meals, concerts, games, and hall rentals. Beyond its role as a gathering place, the Legion contributes to the community through charitable programs such as Meals on Wheels and Christmas hampers, maintaining its reputation as a warm and welcoming centre of Bala life.



WZMH

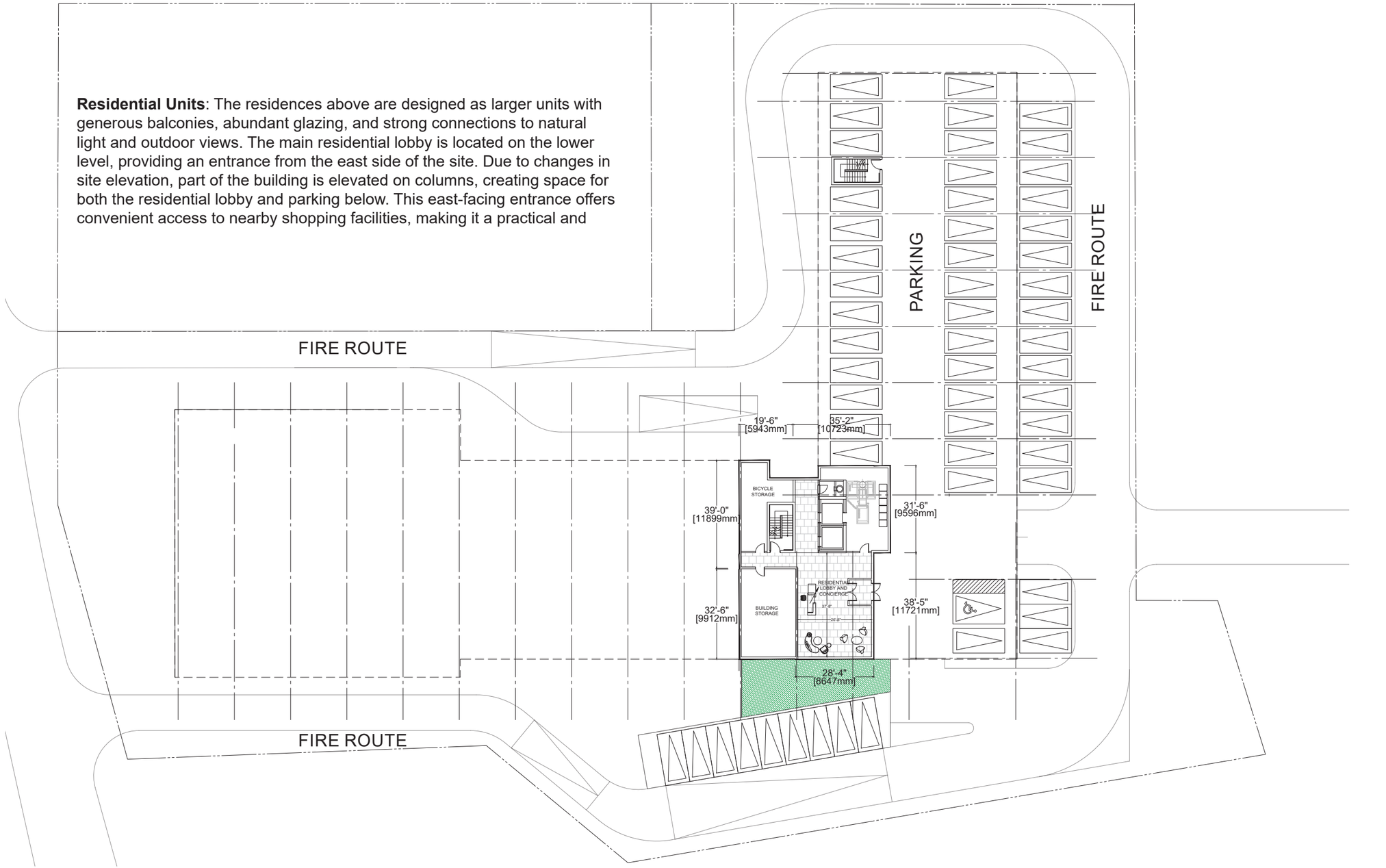
LEVEL P1

STATS. LEVEL P1

GBA/floor: 267.8m² - 2883ft²

Parking: 56

Residential Units: The residences above are designed as larger units with generous balconies, abundant glazing, and strong connections to natural light and outdoor views. The main residential lobby is located on the lower level, providing an entrance from the east side of the site. Due to changes in site elevation, part of the building is elevated on columns, creating space for both the residential lobby and parking below. This east-facing entrance offers convenient access to nearby shopping facilities, making it a practical and



WZMH

LEVEL 1

STATS. LEVEL 1

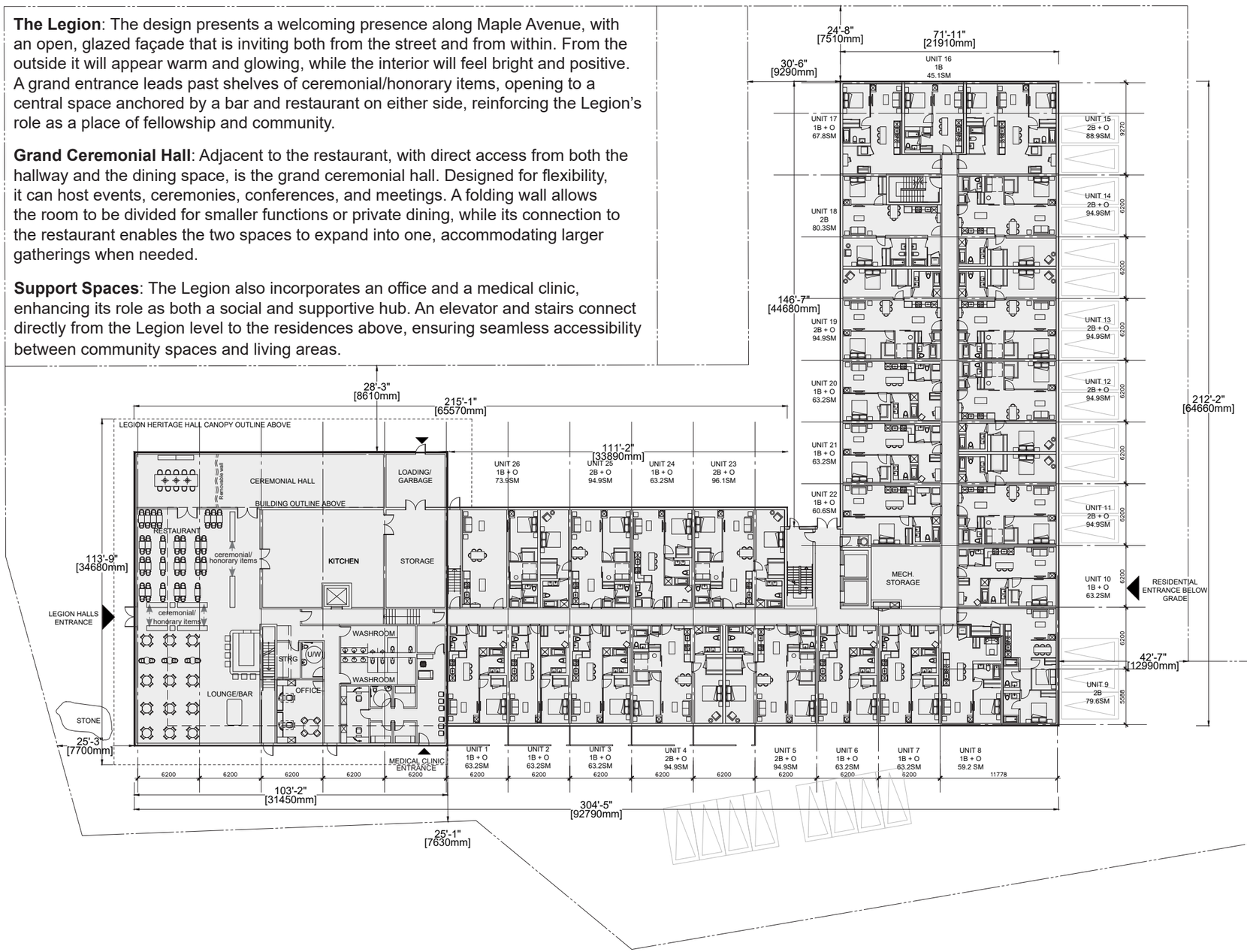
GBA/floor: 3121.8m² - 33603ft²

1B	1 units/floor
1B + Office	13 units/floor
2B	2 units/floor
2B + Office	10 units/floor
	26 units/floor

The Legion: The design presents a welcoming presence along Maple Avenue, with an open, glazed façade that is inviting both from the street and from within. From the outside it will appear warm and glowing, while the interior will feel bright and positive. A grand entrance leads past shelves of ceremonial/honorary items, opening to a central space anchored by a bar and restaurant on either side, reinforcing the Legion's role as a place of fellowship and community.

Grand Ceremonial Hall: Adjacent to the restaurant, with direct access from both the hallway and the dining space, is the grand ceremonial hall. Designed for flexibility, it can host events, ceremonies, conferences, and meetings. A folding wall allows the room to be divided for smaller functions or private dining, while its connection to the restaurant enables the two spaces to expand into one, accommodating larger gatherings when needed.

Support Spaces: The Legion also incorporates an office and a medical clinic, enhancing its role as both a social and supportive hub. An elevator and stairs connect directly from the Legion level to the residences above, ensuring seamless accessibility between community spaces and living areas.



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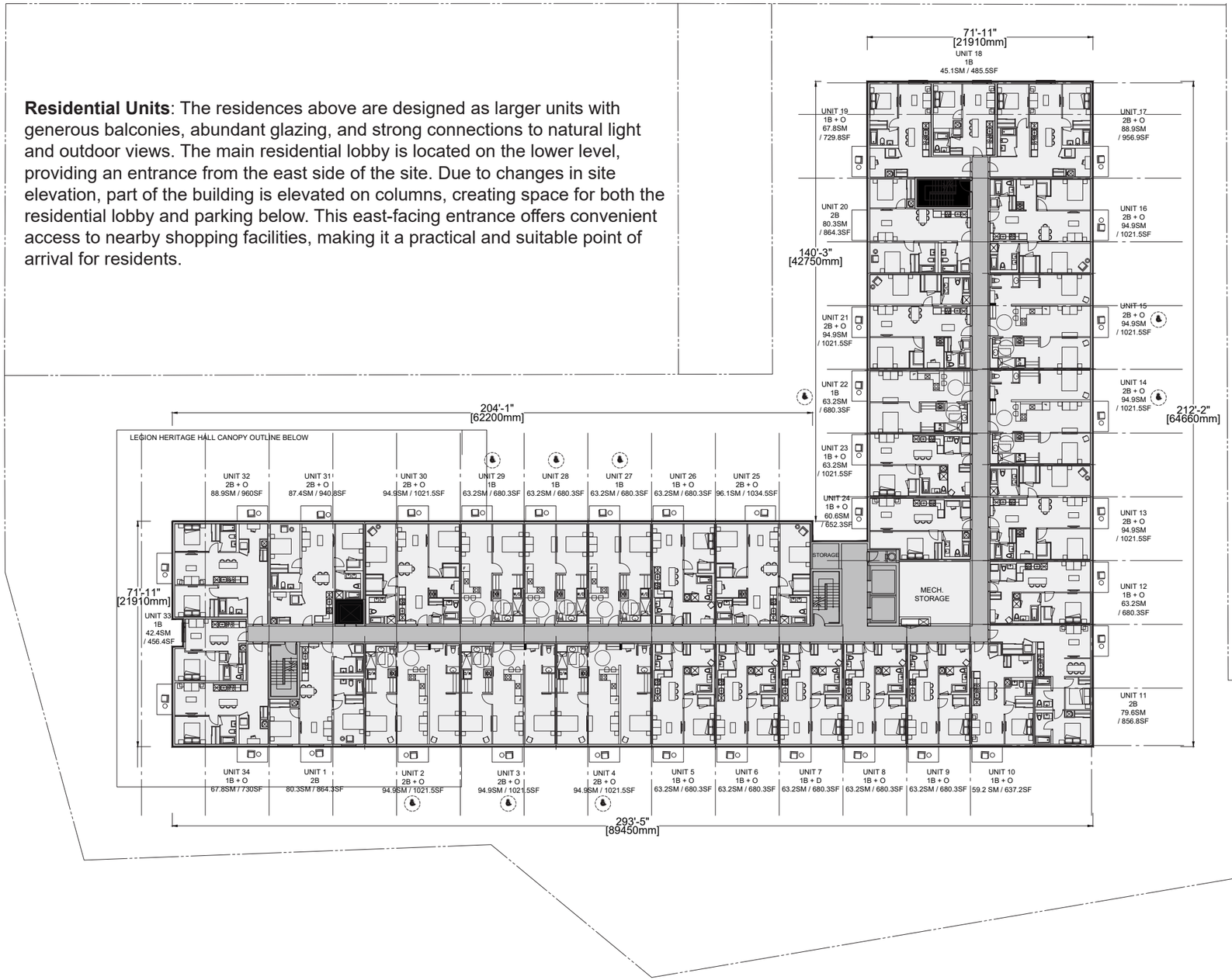
TYPICAL FLOOR

STATS. LEVEL 2

GBA/floor: 2888m² - 31086ft²

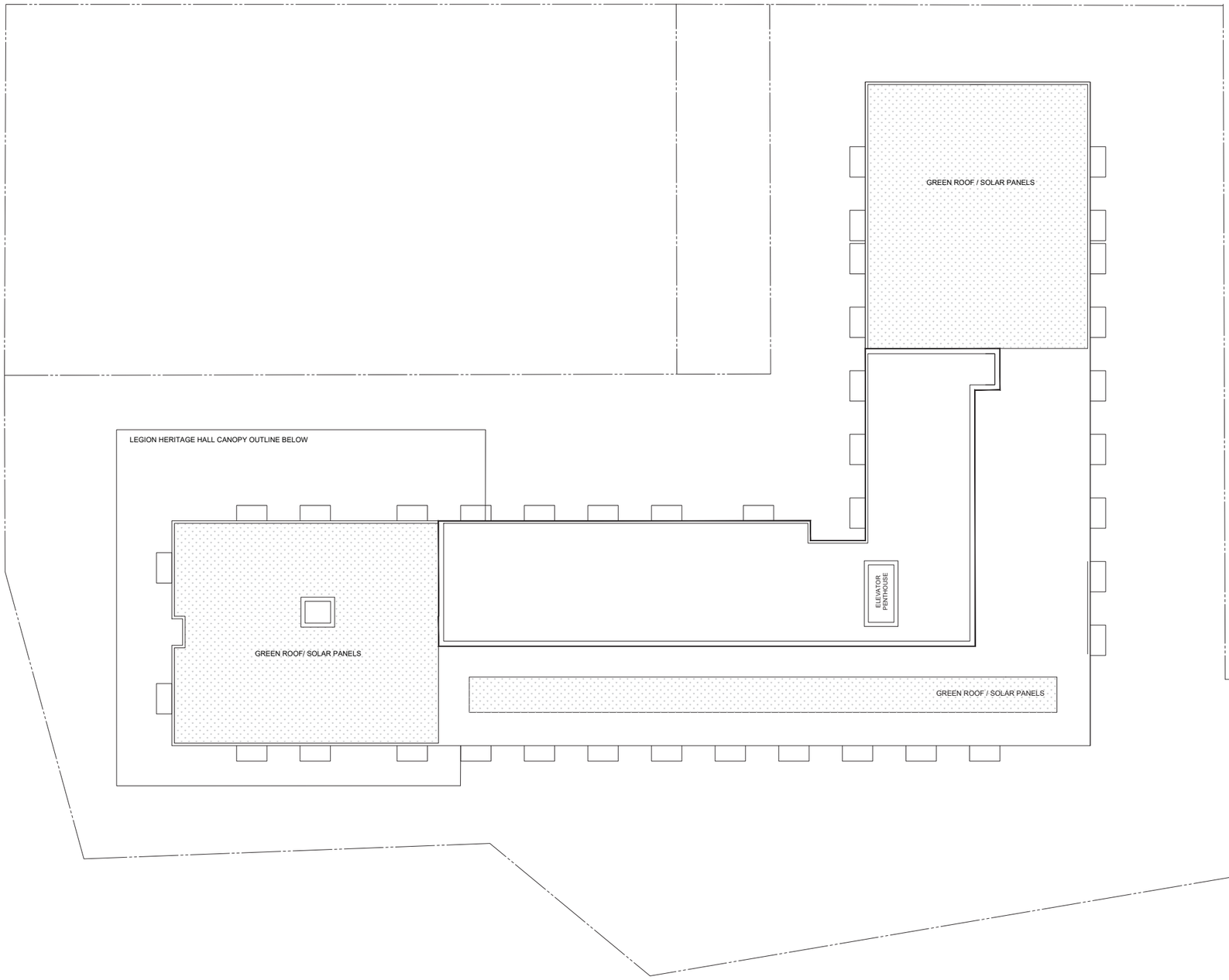
1B	2 units/floor
1B + Office	12 units/floor
2B	3 units/floor
2B + Office	5 units/floor
	34 units/floor

Residential Units: The residences above are designed as larger units with generous balconies, abundant glazing, and strong connections to natural light and outdoor views. The main residential lobby is located on the lower level, providing an entrance from the east side of the site. Due to changes in site elevation, part of the building is elevated on columns, creating space for both the residential lobby and parking below. This east-facing entrance offers convenient access to nearby shopping facilities, making it a practical and suitable point of arrival for residents.



WZMH

ROOF


LEGION HERITAGE HALL CANOPY OUTLINE BELOW
GREEN ROOF / SOLAR PANELS
ELEVATOR PENTHOUSE
GREEN ROOF/ SOLAR PANELS
GREEN ROOF / SOLAR PANELS
0
5
10
20

WZMH

STATS

SITE AREA (sm)	7,728.35
TOTAL GBA (sm)	12,135.10
TOTAL GFA (sm)	11,557.46
DENSITY- (GFA / GROSS SITE AREA)	1.57
LOT COVERAGE	41%

PROPOSED BUILDING AREA					
		LEGION GBA		RESIDENTIAL GBA	
		sm	sf	sm	sf
LOWER LEVEL		-	-	268	2,883
GROUND		930.8	10,019	2,275	24,488
2ND		-	-	2,888	31,086
3RD		-	-	2,888	31,086
4TH		-	-	2,888	31,086
TOTAL		**930.8**	**10019.0**	**11206.8**	**117746.3**

UNIT MIX								
LEVEL	UNIT TYPE							
	stiudo	1B	1B+O*	1B BF**	2B	2B + O*	2B+O* BF**	TOTAL
GROUND	0	1	13	0	2	10	0	26
2ND		2	12	4	3	8	5	34
3RD		2	12	4	3	8	5	34
4TH		2	12	4	3	8	5	34
TOTAL		7	49	12	11	34	15	128
PERCENTAGE	0%	53%			47%			100%
* OFFICE								
** BARRIER-FREE								

BUILDING HEIGHT		
		HEIGHT (M)
MAPLE AVE	Building height (exclude MPH)	14
	Building height (include MPH)	19
VICTORIA ST	Building height (exclude MPH)	16
	Building height (include MPH)	21

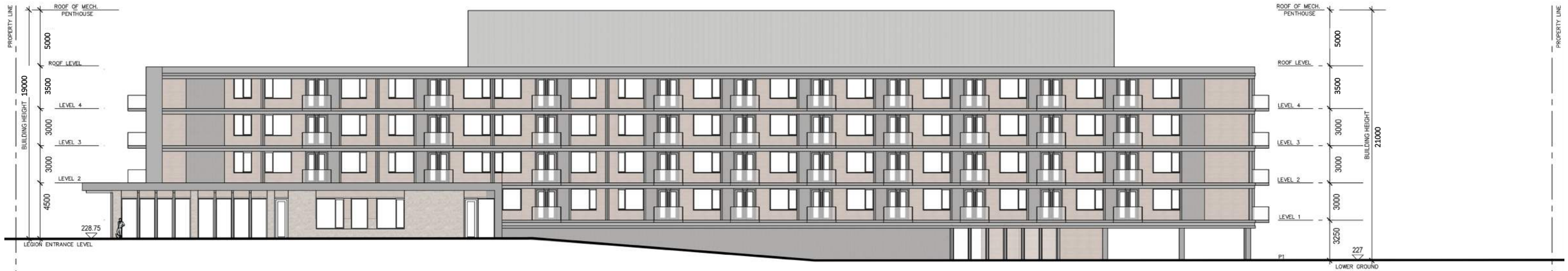
PARKING COUNT	
Type	Count
Standard Parking Spaces	55
Barrier Free Spaces	1
Total Parking Space Provided	**56**

Zoning Compliance Matrix		
Provision	**Required / Permitted**	**Proposed / Existing**
Permitted Uses	Residential Apartment Dwelling	Residential Apartment Dwellings Ground Floor Commercial (Bala Legion)
Minimum Lot Frontage	30.5 m (100 ft)	47.77m (155.73')
Minimum Lot Area	0.09 ha (0.2 ac.)	7,725.65 m^2 1.91 acres 0.77 hectares
Maximum Lot Coverage	35%	41%
Minimum Front Yard Setback	7.6 m (25 ft)	7.7m (25'-3")
Minimum Interior Side Yard Setback	7.6 m (25 ft)	8.6m (28'-3")
Minimum Exterior Side Yard Setback	7.6 m (25 ft)	N / A
Minimum Rear Yard Setback	7.6 m (25 ft)	13m (42'-7")
Maximum Height	10.7 m (35 ft)	20.2m
Maximum Height-Accessory Building	6.1 m (20 ft)	No accessory building proposed – any will comply
Minimum Landscaped Area	35%	27%
Multiple Dwellings		
Minimum Floor Area	Bachelor - 26.9 m^2 (290 $ft.^2$) 1 Bedroom - 33 m^2 (355 $ft.^2$) 2 Bedroom - 39 m^2 (420 $ft.^2$) 3 Bedroom - 45.1 m^2 (485 $ft.^2$)	1B-42.4m^2 (456.4 $ft.^2$) 2B-79.6m^2 (856.8 $ft.^2$)
Parking Setback	In the case of a multiple dwelling and apartment dwelling only, no parking space shall be located within 3 m (10 ft.) of a lot line.	Complies
Landscaped Buffer	Where a multiple dwelling or apartment dwelling, greater than 3 units abuts a single family residential zone (R1, R2, R3, or R4), 3 m (10 ft.) of the required yard shall be used and maintained as a landscaped buffer.	South lot line adjacent to R1 zones: Provided – soft and hardscape
Special Provisions: RM2 Zone		
Permitted Density	In a Multiple Residential High Density (RM2) zone the density of development shall not exceed 60 dwelling units per hectare (24 units/acre) in addition to the requirements of Section 5.1.4.3 of this By-law.	166 units per hectare.
Parking Provisions		
Apartment Dwellings (i.e. triplex, fourplex)	1.75 spaces per dwelling unit, plus 1 visitor parking space per 2 dwelling units or part thereof.	0.44 space per unit
Barrier Free Spaces	1 parking space per 25 parking spaces required based on the use as described in Table 3.28; and 1 additional parking space per 25 or more parking spaces required based on Table 3.28.	0.44 space per 25 parking spaces

NORTH AND SOUTH ELEVATIONS



NORTH ELEVATION



SOUTH ELEVATION

0 5 10 20

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EAST AND WEST ELEVATIONS



EAST ELEVATION

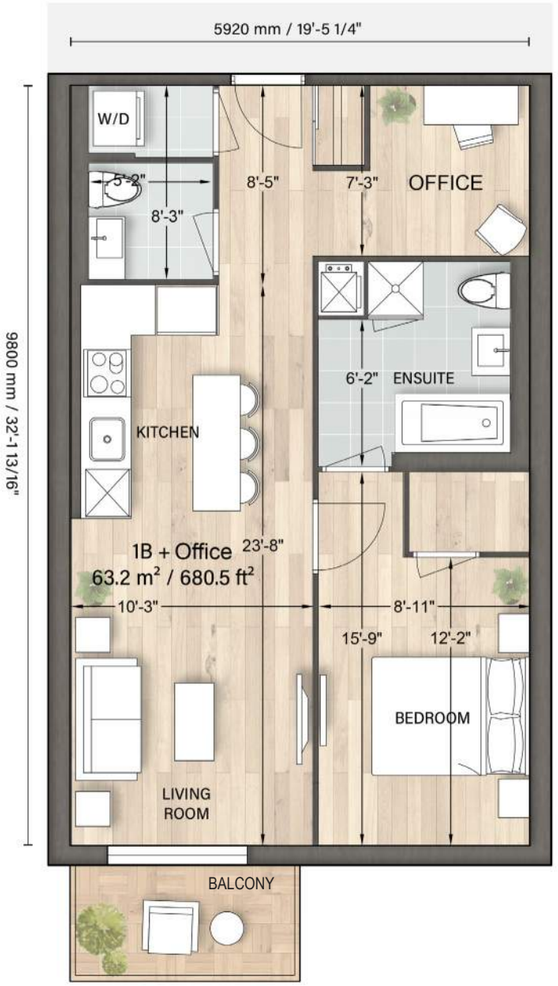


WEST ELEVATION

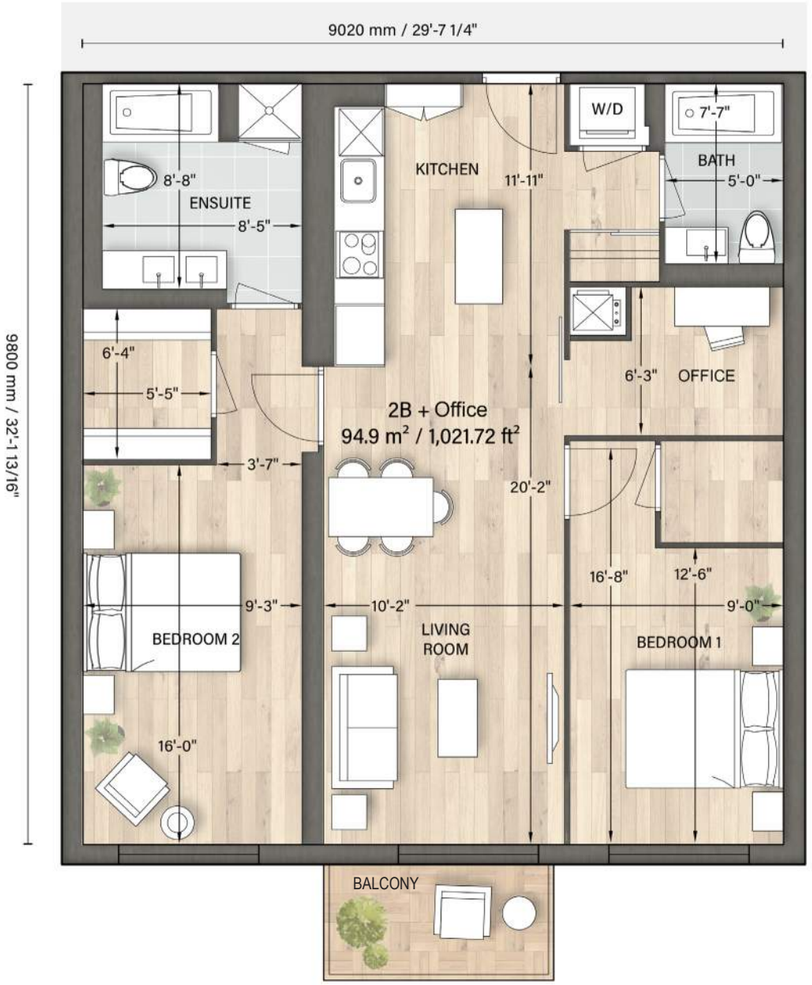
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TYPICAL UNIT LAYOUT



ONE BEDROOM + OFFICE

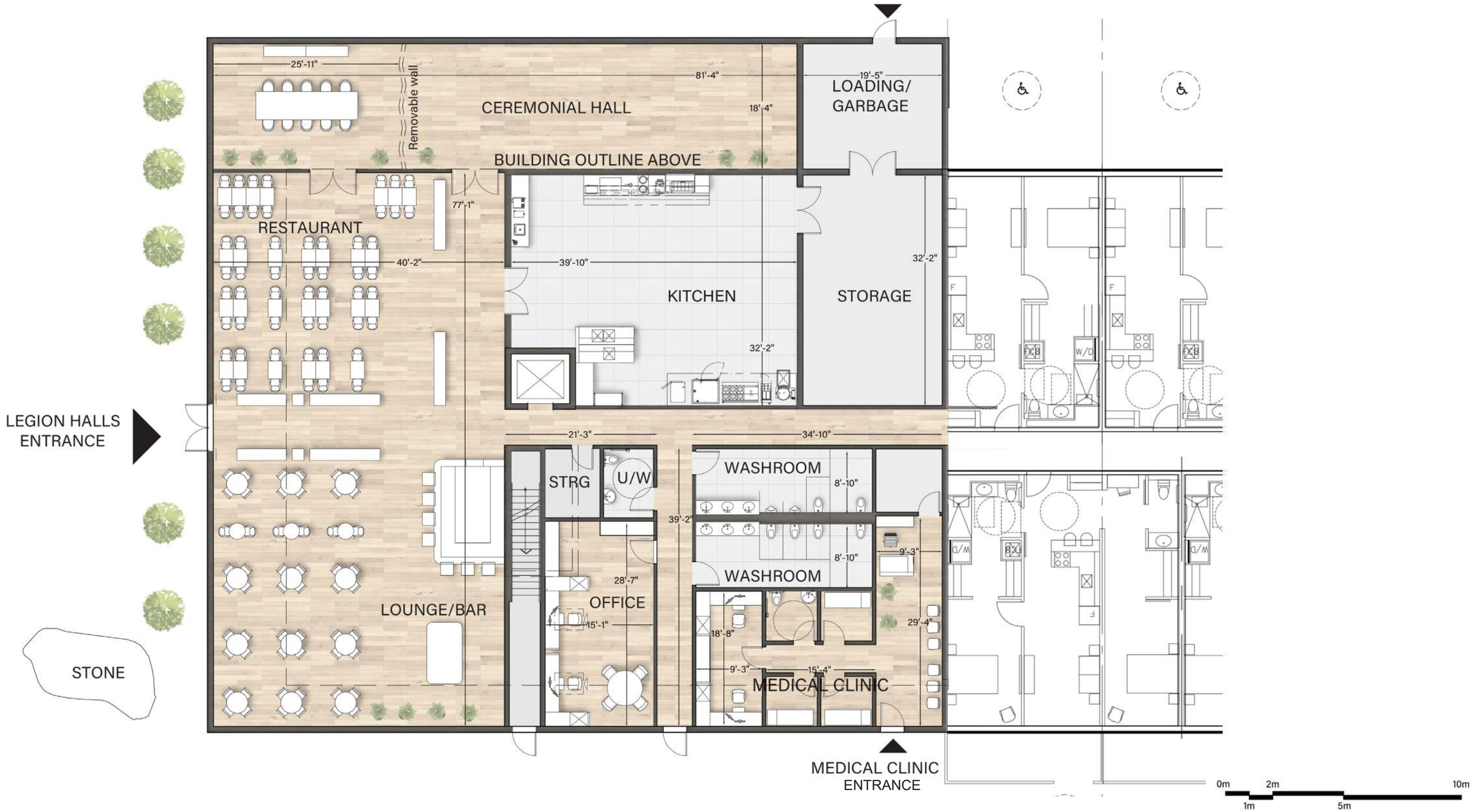


TWO BEDROOMS + OFFICE

0m 1m 2m 5m

WZMH

ROYAL CANADIAN LEGION LAYOUT



WZMH

ELEVATION WEST

The facade of the single-storey Legion blends expansive glazing with stone and warm wood textures. Inspired by Muskoka's natural palette, the design pairs earthy tones with dark-framed windows, creating a grounded yet contemporary character.



WZMH

ELEVATION SOUTH

Expansive glazing and warm wood textures inspired by Muskoka’s natural palette, emphasizes a balance between transparency and material weight.



WZMH

ENTRANCE TO LEGION HALLS



WZMH

THANK YOU

WZMH

THE CORPORATION OF THE TOWNSHIP OF MUSKOKA LAKES

BY-LAW 2026-XXX

Being a By-law of the Township of Muskoka Lakes to adopt Amendment #67 to the Official Plan of the Township of Muskoka Lakes

(Official Plan Amendment #67 – Site Specific – Royal Canadian Legion)

WHEREAS Council recommends that the Township of Muskoka Lakes adopt Amendment Number 67 to the Official Plan of the Muskoka Lakes Planning Area;

AND WHEREAS the Council of the Township of Muskoka Lakes has fulfilled the requirements of Section 17 of the Planning Act, R.S.O., 1990, as amended;

AND WHEREAS Official Plans may be repealed or amended in accordance with the provisions of Section 21 of the Planning Act, R.S.O., 1990, as amended;

NOW THEREFORE the Council of the Township of Muskoka Lakes enacts as follows:

1. THAT Amendment Number 67 to the Official Plan of the Township of Muskoka Lakes consisting of the attached explanatory text and map being Schedule A, is hereby adopted;

2. THAT the Mayor and Clerk are hereby authorized and directed to affix the seal of the Corporation to Amendment Number 67 and to make application to the District Municipality of Muskoka for approval of the said Amendment;

3. THAT this by-law shall come into force and take effect on the final passing thereof.

READ A FIRST AND SECOND TIME this ___day of _____, 2026.

READ A THIRD TIME AND FINALLY PASSED this ___day of _____, 2026.

_____ _____

Peter Kelley
Mayor

Crystal Best-Sararas
Clerk

DRAFT

AMENDMENT NUMBER 67
TO THE OFFICIAL PLAN
OF THE TOWNSHIP OF
MUSKOKA LAKES
(ROYAL CANADIAN LEGION)

DRAFT

SECTION 1 COMPONENTS OF THE AMENDMENT

1.1 Section 5 herein shall constitute Amendment Number 67 to the Official Plan of the Township of Muskoka Lakes.

1.2 Sections 1, 2, 3, 4, 6 and 7 herein do not constitute part of the formal Amendment but provide general information respecting the Amendment.

SECTION 2 LANDS SUBJECT TO THE AMENDMENT

2.1 The lands subject to the amendment are located in the Urban Centre of Bala and consist of a portion of the lands described as Lot 14, Concession B, Lot 98, Plan 19, Part of Lot 79 to 82, Part of Lot 84, Lot 99 to Part of Lot 101; Township of Muskoka Lakes, District Municipality of Muskoka, as shown hatched on Schedule A affixed hereto.

SECTION 3 PURPOSE OF THE AMENDMENT

3.1 The purpose of the proposed Official Plan Amendment is to redesignate the subject lands from Urban Centre – Institutional to Urban Centre – Urban Residential to facilitate high-density multi-residential development, as well as housing the Bala Branch of the Royal Canadian Legion and a medical clinic.

SECTION 4 BACKGROUND AND BASIS OF THE AMENDMENT

4.1 The lands subject to the amendment are in the built-up area of the Bala Urban Centre and are designated Urban Centre – Institutional in the 2023 Township of Muskoka Lakes Official Plan (TMLOP).

4.2 The Official Plan Amendment application has been submitted concurrently with Zoning By-law Amendment Application ZBA-22/26 to rezone the subject lands from Institutional (I) to Community Residential – Multiple Residential High Density Sewer and Water (RM2), to permit a number of exemptions related to permitted uses, height, density, lot coverage, parking requirements, and other site-specific provisions, and to repeal the existing site-specific by-law (By-law 2017-104). The subject lands currently contain the Royal Canadian Legion – Branch 424.

4.3 The proposal aligns with the long-term vision for the Bala Urban Centre, supporting intensification and revitalization in a serviced urban area while maintaining the legion's operation. The proposal also supports the goals of the 2022 Township of Muskoka Lakes Community Improvement Plan for Bala and Port Carling, which identifies the Bala Legion property as a key site for intensification, with an emphasis placed on the provision of housing, particularly for seniors housing.

4.4 A Planning Justification Report prepared by Morgan Planning & Development Inc., dated

April 2026, has been submitted in support of the amendment, which concludes that the proposed application is consistent with the Provincial Planning Statement (PPS), conforms to the District of Muskoka Official Plan and the Township of Muskoka Lakes Official Plan.

4.5 A Functional Servicing Report was prepared by Pinestone Engineering Ltd., dated April 23, 2026, has been submitted in support of the amendment, which concludes that municipal water and sewage services are available to the subject lands (subject to confirmation of capacity from the District Municipality of Muskoka) and recommends a number of measures be implemented.

4.6 A Parking Justification Study prepared by Tatham Engineering, dated April 23, 2026, has been submitted in support of the amendment, which concludes that the proposed parking supply on-site coupled with Township owned parking spaces off-site is considered appropriate, provided the applicant can obtain permissions to utilize them.

4.7 A Transportation Impact Brief prepared by Tatham Engineering, dated April 23, 2026, has been submitted in support of the amendment, which concludes that the road network will readily accommodate the proposed development without the need for improvements.

4.8 The amendment is consistent with the Provincial Planning Statement, 2024.

4.9 The proposed development will be subject to Site Plan Control to address the recommendations of the aforementioned studies/reports.

SECTION 5 THE AMENDMENT

5.1 Schedule B2 (Bala Land Use) of the Township of Muskoka Lakes 2023 Official Plan is hereby amended by redesignating the lands shown hatched on Schedule "A" attached hereto from "Urban Centre - Resort Institutional" to "Urban Centre - Urban Residential."

5.2 Part I “Urban Centre Land Use Designations” of the Township of Muskoka Lakes 2023 Official Plan is hereby amended by the addition of the following subsection:

Notwithstanding Sections I2.3.2.1 h) and I4.1.2.3 e) of the 2023 Official Plan of the Township of Muskoka Lakes, for the lands described as Lot 14, Concession B, Lot 98, Plan 19, Part of Lot 79 to 82, Part of Lot 84, Lot 99 to Part of Lot 101, as shown hatched on Schedule A attached hereto, the following policies shall apply:

I2.3.2.1.1 New mid-rise residential development that has a maximum height of 4 storeys and 22 metres may be permitted provided it:

i. Is compatible with adjacent residential neighbourhoods;

ii. Will not cause traffic hazards or an unacceptable level of congestion on surrounding roads;

iii. Is located in proximity to **public service facilities**, such as parks, schools and open spaces;

iv. Is located on a site that has adequate land area to incorporate the building, on-site parking, an outdoor amenity area, and appropriate buffering such as setbacks.

DRAFT

landscaping and fencing to ensure the compatibility of the use with adjacent properties;

v. Takes advantage, where appropriate, of the topography and natural vegetation of the site and area in minimizing the impacts of mid-rise buildings on adjacent land uses; and,

vi. Is demonstrated that the potential shadow impacts associated with mid-rise buildings will be at an acceptable level on adjacent properties.

I4.1.2.3.1 High density development shall not exceed 170 units per gross hectare.

SECTION 6 IMPLEMENTATION

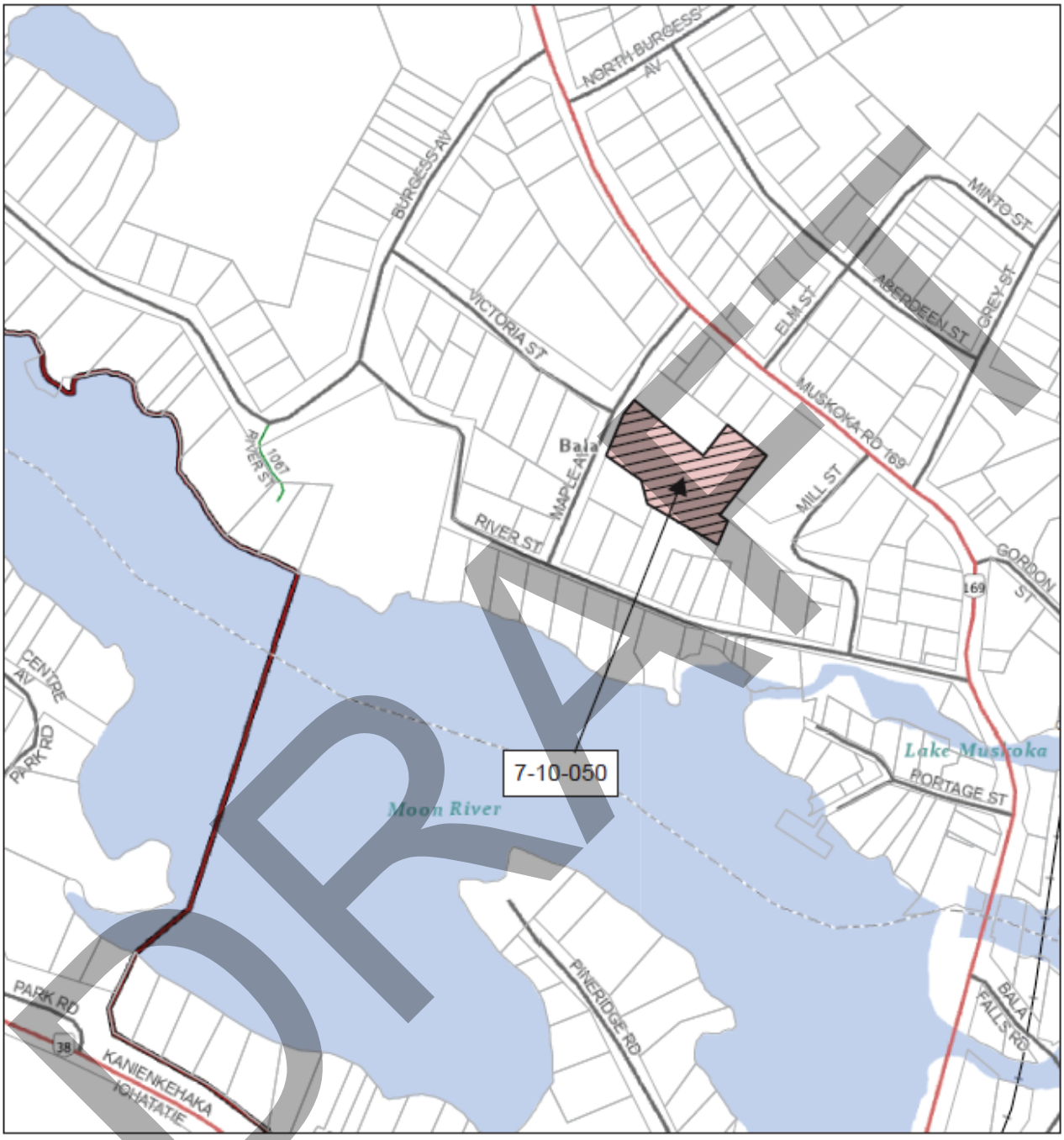
6.1 The changes to the Official Plan of the Township of Muskoka Lakes as described in this Amendment shall be implemented in accordance with the Official Plan of the Township of Muskoka Lakes and Sections 17 and 21 of the *Planning Act* R.S.O 1990.

SECTION 7 INTERPRETATION

7.1 The boundaries as shown on Schedule A attached to this Amendment are approximate only and not intended to define the exact limits of the defined area except where they coincide with roadways, watercourses and other clearly defined physical features. Where the general intent of the 2023 Official Plan of the Township of Muskoka Lakes is maintained, minor adjustments to the boundaries for the purposes of the zoning by-law implementing the Official Plan may be permitted without the requirement of an amendment to the Plan.

DRAFT

SCHEDULE A TO OPA 67



NOT A PLAN OF SURVEY. FOR INFORMATIONAL PURPOSES ONLY.

1:6,623

0 0.04 0.08 0.16 mi

0 0.05 0.1 0.2 km

Parcel: Assessment
District Municipality
Area Municipality
Geographic Township
Settlement Areas
Urban Centre

Road Network
District
Township
Private
Wetland With Significance
Evaluated-Provincial

Evaluated-Other
Stream
Waterbody
Major Lake
Canada_Hillshade
World_Hillshade

Sources: NRCan, Esri Canada, and Canadian Community Maps contributors., Sources: Esri, Vantor, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, and the GIS user community

DRAFT

THE CORPORATION OF THE TOWNSHIP OF MUSKOKA LAKES

BY-LAW NUMBER 2026-XXX

Being a by-law to amend Comprehensive Zoning By-law 2014-24, as amended, in the Township of Muskoka Lakes

WHEREAS the authority to pass this by-law is provided by Section 34 of the Planning Act, R.S.O. 1990, Chapter P.13 and amendments thereto;

AND WHEREAS By-law 2014-14 was enacted by the Corporation of the Township of Muskoka Lakes to regulate land use within the Municipality;

AND WHEREAS the Council of the Corporation of the Township of Muskoka Lakes deems it advisable to further amend By-law 2014-14;

AND WHEREAS a concurrent Official Plan Amendment Application (OPA-67) has been applied for to redesignate the lands from Urban Centre – Institutional (I) to Urban Centre – Urban Residential; and to permit an increased development allowance density and increased height.

NOW THEREFORE THE COUNCIL OF THE CORPORATION OF THE TOWNSHIP OF MUSKOKA LAKES ENACTS AS FOLLOWS:

1. Schedule 56 of By-law 2014-14, as amended, is hereby further amended by rezoning lands known as Lot 14, Concession B, Lot 98, Plan 19, Part of Lot 79 to 82, Part of Lot 84, Lot 99 to Part of Lot 101 (in the former Township of Bala), now in the Township of Muskoka Lakes, as shown hatched on Schedule II to By-law 2026-XXX, from Institutional (I) to Community Residential – Multiple Residential High Density Sewer and Water (RM2).

2. For the purposes of this By-law, no new buildings or structures, or new land uses shall be permitted on lands identified with the Holding (-H) symbol, as shown on Schedule I until such time as a further By-law is passed to remove the Holding (-H) symbol in accordance with Section 36 of the Planning Act, R.S.O. 1990, as amended.

   In this respect, Council shall only consider a By-law to remove the Holding (-H) symbol when Council is satisfied that the following matters are addressed:

   a) Hydraulic modelling has been completed and the results incorporated into the Functional Servicing report to the satisfaction of the District Municipality of Muskoka;

   b) The applicant has entered into an agreement with the District Municipality of Muskoka respecting the provision of municipal water and sewer services and related capacity allocation, including the provision of securities, if necessary;

   c) The Transportation Impact Brief, prepared by Tatham Engineering and dated April 23, 2026, has been peer reviewed to the satisfaction of the Township and the District of Muskoka;

   d) The Parking Justification Study, prepared by Tatham Engineering and dated April 23, 2026, has been peer reviewed to the satisfaction of the Township;

   e) The Functional Servicing Report, prepared by Pinestone Engineering Ltd. and dated April 23, 2026, has been peer reviewed to the satisfaction of the Township and the District of Muskoka;

   f) That any findings of the peer reviews be addressed and/or implemented to the satisfaction of the Township and the District of Muskoka;

   g) The subject lands be required to obtain site plan approval and that a satisfactory Site Plan Agreement be entered into and registered on title, along with securities, for matters including but are not limited to, implementation of the recommendations of the technical studies to the satisfaction of the

DRAFT

Township and the District Municipality of Muskoka; and

h) That the necessary parking be provided or agreements secured and executed to address parking requirements to the satisfaction of the Township.

3. Section 12 of By-law 2014-14 is hereby further amended by the addition of the following subsection:

87-XXXX i) The lands affected by this amendment are described as Lot 14, Concession B, Lot 98, Plan 19, Part of Lot 79 to 82, Part of Lot 84, Lot 99 to Part of Lot 101, (in the former Township of Bala), now in the Township of Muskoka Lakes, as shown hatched on Schedule I to By-law 2026-XXX.

ii) Despite the provisions of Section 3.28 a) of Zoning By-law 2014-14, as amended, for those lands described above, the minimum number of required parking spaces for the proposed development shall be 56.

iii) Despite the provisions of Section 3.28 b) of Zoning By-law 2014-14, as amended, for those lands described above, the minimum number of required barrier free parking spaces shall be 5.

iv) Despite the provisions of Section 5.1.1 of Zoning By-law 2014-14, as amended, for those lands described above, the only permitted main uses shall be a Residential Apartment Dwelling and a Service Club (Bala Legion).

v) Despite the provisions of Section 5.1.2 of Zoning By-law 2014-14, as amended, for those lands described above, the only permitted accessory uses shall be a Medical Clinic and an Office.

v) Despite the provisions of Section 5.1.3 of Zoning By-law 2014-14, as amended, for those lands described above, the maximum permitted lot coverage shall be 45% (37,421 sq. ft.), as shown in the location and extent on Schedule III to By-law 2026-XXX.

vi) Despite the provisions of Section 5.1.3 of Zoning By-law 2014-14, as amended, for those lands described above, the maximum permitted height for the proposed mixed-use building shall be 72.2 feet, as shown in the location and extent on Schedule IV to By-law 2026-XXX.

vii) Despite the provisions of Section 5.1.3 of Zoning By-law 2014-14, as amended, for those lands described above, the maximum number of storeys for the proposed mixed-use building shall be 4, as shown in the location and extent on Schedule IV to By-law 2026-XXX.

viii) Despite the provisions of Section 5.1.3 of Zoning By-law 2014-14, as amended, for those lands described above, the minimum required landscaped area shall be 25%, as shown in the location and extent on Schedule III to By-law 2026-XXX.

ix) Despite the provisions of Section 5.1.8 of Zoning By-law 2014-14, as amended, for those lands described above, the maximum permitted density of development shall be 170 units per hectare.

4. Schedules I, II, III and IV attached hereto are hereby made part of this By-law.

5. All other provisions of By-law 2014-14 apply. To the extent of any conflict between By-law 2026-XXX and By-law 2014-14, as amended, the provisions of By-law 2026-XXX shall apply.

6. REPEAL OF BY-LAWS

6.1 By-law 2017-104 of the Corporation of the Township of Muskoka Lakes is hereby repealed.

DRAFT

7. That this by-law shall come into force and take effect _____, 2026.

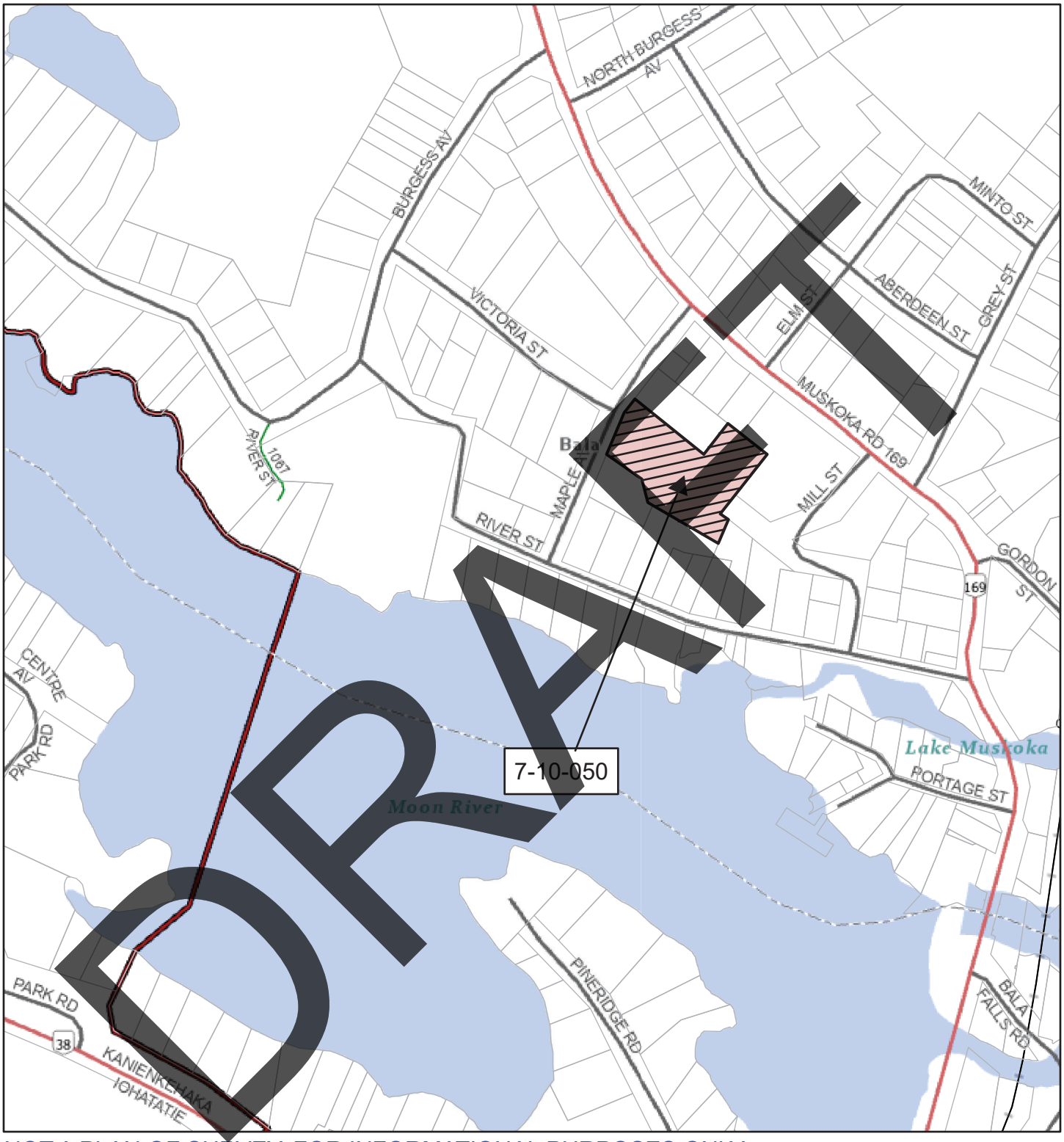
Read a **first, second** and **third time** and **finally passed** this **__th day of _____, 2026.**

_____
Mayor Peter Kelley

_____
Crystal Best-Sararas, Clerk

DRAFT

SCHEDULE I TO DRAFT BY-LAW 2026-XXX



NOT A PLAN OF SURVEY. FOR INFORMATIONAL PURPOSES ONLY.

1:6,623

0 0.04 0.08 0.16 mi

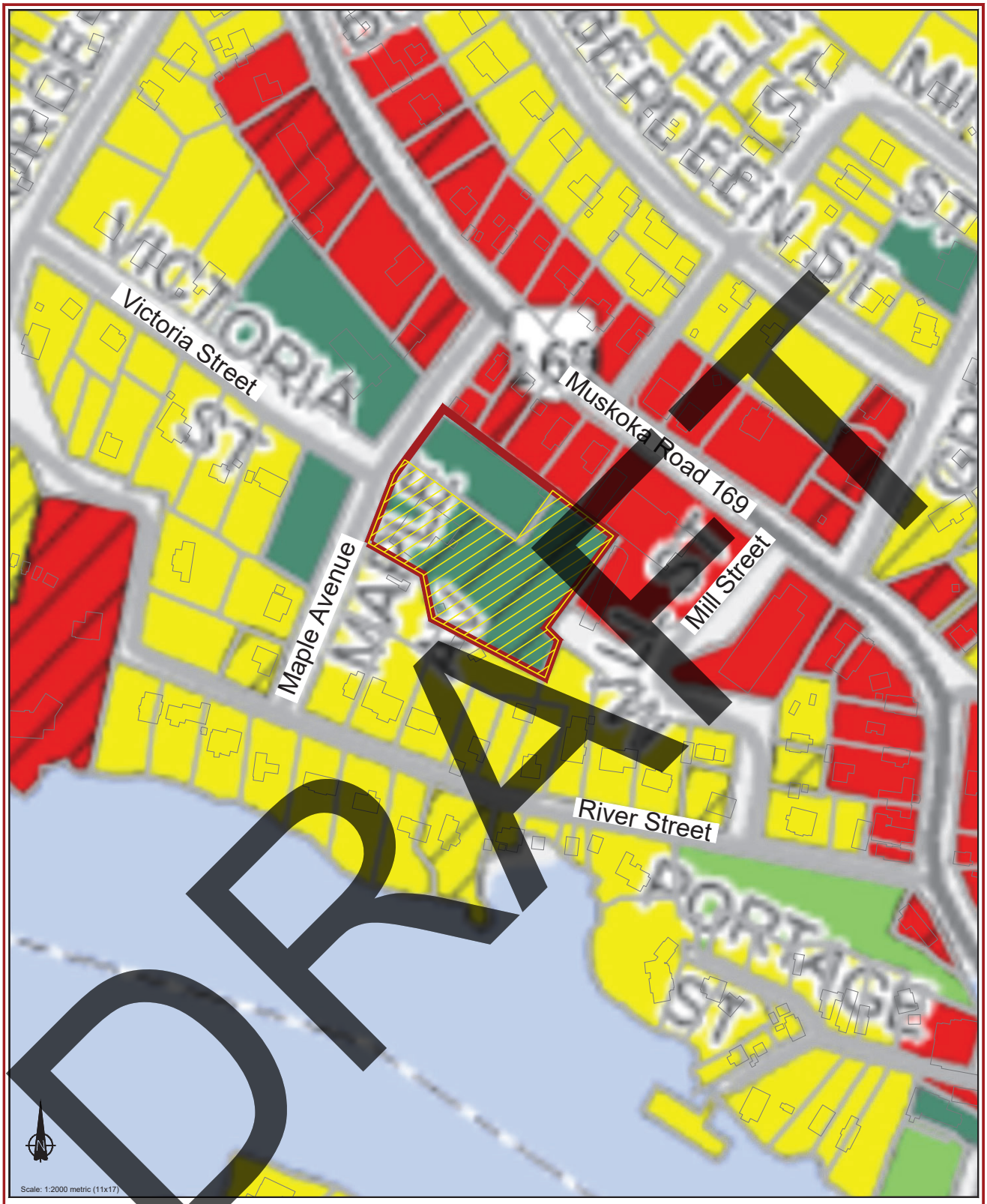
0 0.05 0.1 0.2 km

Parcel: Assessment
District Municipality
Area Municipality
Geographic Township
Settlement Areas
Urban Centre

Road Network
District
Township
Private
Wetland With Significance
Evaluated-Provincial

Evaluated-Other
Stream
Waterbody
Major Lake
Canada_Hillshade
World_Hillshade

Sources: NRCan, Esri Canada, and Canadian Community Maps contributors., Sources: Esri, Vantor, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, and the GIS user community



DRAFT

SUBJECT LANDS

LANDS TO BE REZONED FROM INSTITUTIONAL (I) - EXEMPTION (87-1781) TO MULTIPLE RESIDENTIAL HIGH DENSITY - EXCEPTION (RM2-XX) - SEWER AND WATER

COMMUNITY COMMERCIAL (C)

COMMUNITY RESIDENTIAL (R)

INSTITUTIONAL (I)

OPEN SPACE (OS)

NOT TO SCALE

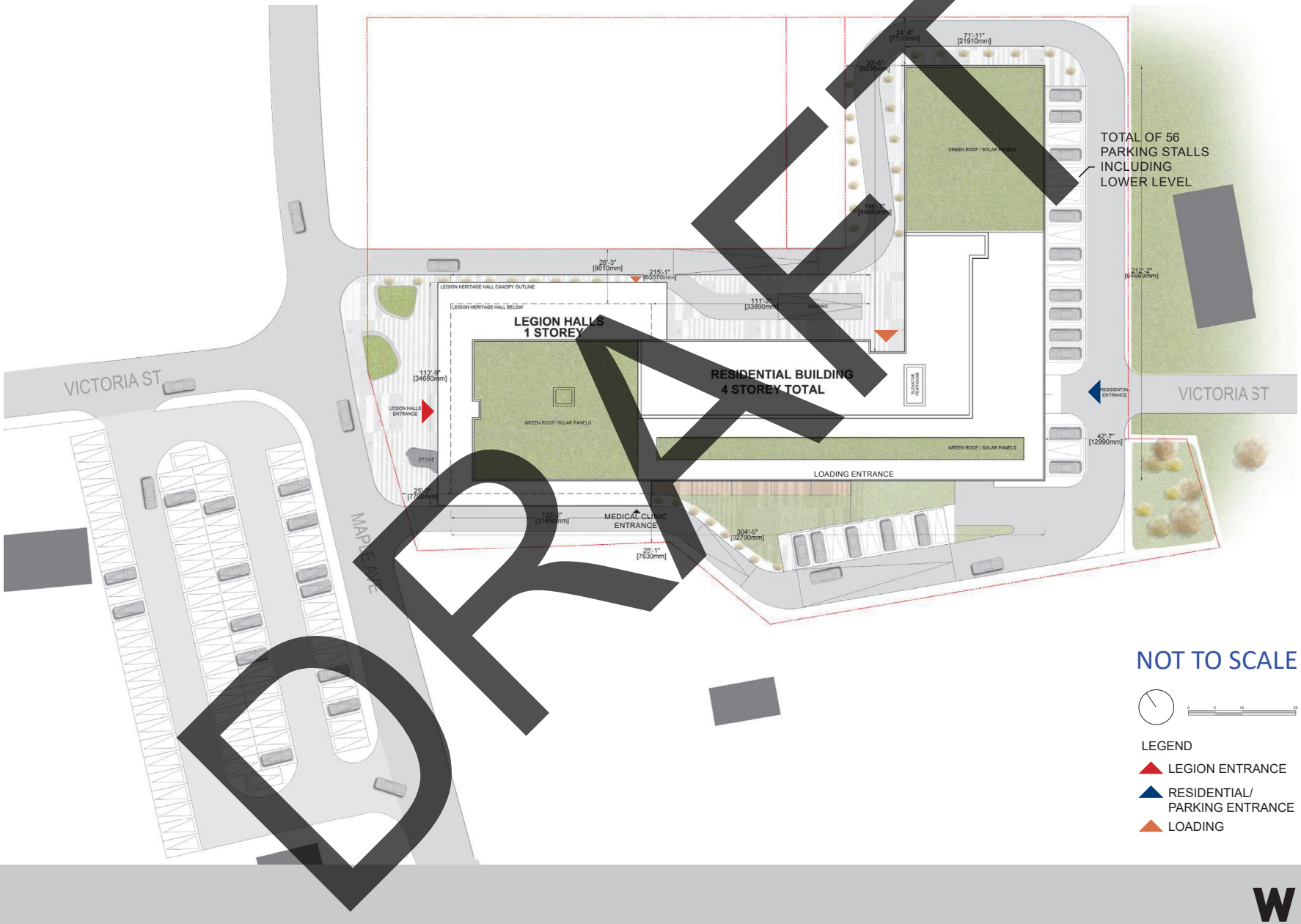
THIS IS SCHEDULE 'A' TO THE ZONING BY-LAW AMENDMENT NO._____PASSED THIS _____DAY OF _____, 2026.

MAYOR _____

CLERK _____

SCHEDULE II TO DRAFT BY-LAW 2026-XXX

SCHEDULE III TO DRAFT BY-LAW 2026-XXX



DRAFT

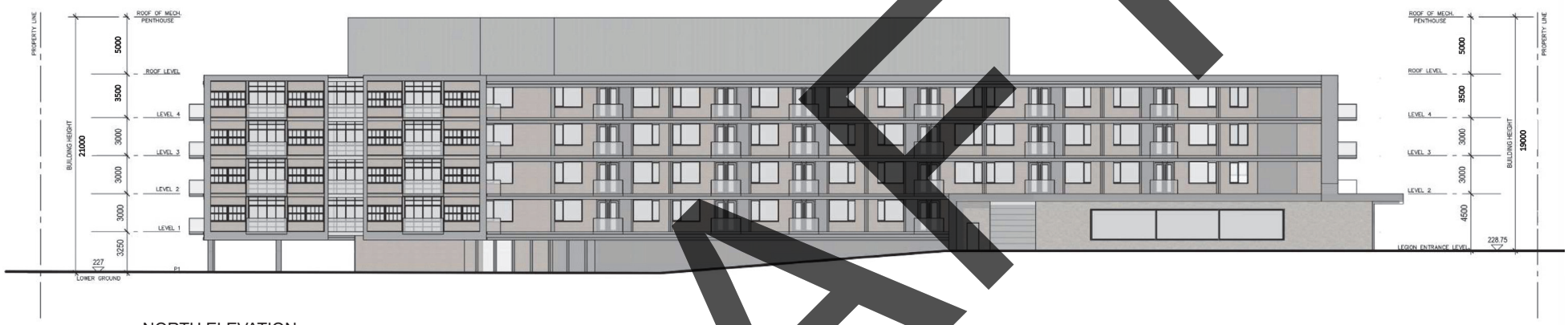
NOT TO SCALE

LEGEND

- LEGION ENTRANCE
- RESIDENTIAL/ PARKING ENTRANCE
- LOADING

WZMH

SCHEDULE IV TO DRAFT BY-LAW 2026-XXX (PAGE 1 OF 2)



NORTH ELEVATION



SOUTH ELEVATION

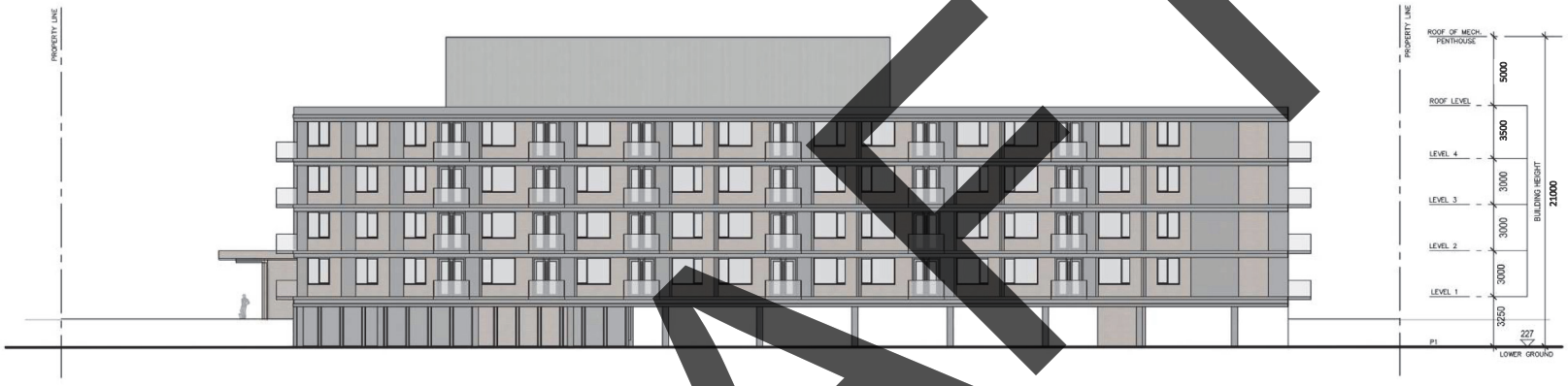
NOT TO SCALE

0 5 10 20

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SCHEDULE IV TO DRAFT BY-LAW 2026-XXX (PAGE 2 OF 2)



EAST ELEVATION



WEST ELEVATION

NOT TO SCALE

0 5 10 20

DRAFT

WZMH

April 23, 2026

Township of Muskoka Lakes
P.O. Box 129
1 Bailey Street, Port Carling, ON
P0B 1J0

Attn: Emily Crowder, Senior Planner

Re: Submission Cover Letter
1011 Maple Avenue
Bala Legion Project
Official Plan Amendment & Zoning By-law Amendment Applications

---

MORGAN Planning & Development Inc. (MP&D) has been retained by The Royal Canadian Legion Bala – Branch 424 (the "Applicant") to assist in the preparation and submission of Planning Act applications in support of the proposed redevelopment of the lands municipally known as 1011 Maple Avenue, located within the Bala Urban Centre in the Township of Muskoka Lakes.

The subject property currently contains the Royal Canadian Legion – Branch 424 building, which has served the Bala community as a significant social, cultural, and gathering place since 1946. The proposed development seeks to respectfully evolve the site by introducing a residential apartment building while maintaining and enhancing the Legion's continued presence on the property. In addition, a small-scale medical clinic and ground floor community-serving uses are proposed, reinforcing the site's role as a local service and community hub.

To facilitate the proposed development, applications for an Official Plan Amendment (OPA) and Zoning By-law Amendment (ZBA) are required.

The proposed OPA seeks to redesignate the subject lands from "Institutional" to "Urban Residential – Exception" reflecting the transition of the site from its historic institutional use to an appropriate location for residential intensification within the Bala Urban Centre. The amendment also establishes a site-specific policy framework to permit a mixed-use development and to increase the permitted density from 70 units per gross hectare to approximately 166 units per gross hectare, enabling the proposed 128-unit residential development on a 0.77-hectare site.

The OPA supports a compact and efficient form of development that optimizes the use of existing infrastructure and services, while contributing to housing supply and supporting complete community objectives. The proposal aligns with Provincial, District, and Township planning policy direction that encourages residential intensification within established settlement areas.

The proposed Zoning By-law Amendment seeks to rezone the property to a site-specific "Multiple Residential High Density – Exception (RM2-XX) – Sewer and Water" Zone. This zoning will replace existing permissions under Zoning By-law 2017-104 and implement a regulatory framework consistent with the proposed development concept and updated policy direction.

The RM2-XX Zone will permit a residential apartment building and recognize ground floor commercial and community-serving uses, including the Bala Legion and a medical clinic. Site-specific provisions will establish appropriate development standards, including building height, density, lot coverage, parking, and other regulations necessary to implement the proposal in a planned and orderly manner, while ensuring compatibility with the surrounding area.

In summary, the proposed Official Plan Amendment and Zoning By-law Amendment represent good planning, are consistent with applicable Provincial, District, and Township policy frameworks, and are in the public interest. The applications support appropriate intensification within a serviced settlement area and contribute to the continued evolution of Bala as a complete and sustainable community.

Supporting technical materials, including the Planning Justification Report and draft amendment documents, have been submitted in support of the applications.

Thank you in advance for your time and consideration. We look forward to working collaboratively with municipal staff throughout the review and processing of these applications.

Kind Regards,



James Hunter, BURPL, MCIP, RPP
Senior Planner
MORGAN Planning & Development Inc.

Soil Engineers Ltd.
CONSULTING ENGINEERS
GEOTECHNICAL • ENVIRONMENTAL • HYDROGEOLOGICAL • BUILDING SCIENCE
90 WEST BEAVER CREEK ROAD, SUITE 100, RICHMOND HILL, ONTARIO L4B 1E7 · TEL: (416) 754-8515 · FAX: (905) 881-8335

BARRIE	MISSISSAUGA	OSHAWA	NEWMARKET	MUSKOKA	HAMILTON
TEL: (705) 721-7863	TEL: (905) 542-7605	TEL: (905) 440-2040	TEL: (905) 853-0647	TEL: (705) 721-7863	TEL: (905) 777-7956
FAX: (705) 721-7864	FAX: (905) 542-2769	FAX: (905) 725-1315	FAX: (905) 881-8335	FAX: (705) 721-7864	FAX: (905) 542-2769

A REPORT TO
TED SMITH CONSTRUCTION OF BALA LTD.

A GEOTECHNIAL INVESTIGATION REPORT FOR PROPOSED RESIDENTIAL BUILDING

1011 MAPLE AVENUE

TOWNSHIP OF MUSKOKA LAKES
(BALA)

REFERENCE NO. 2602-S029

MARCH 2026

DISTRIBUTION

Digital Copy – Ted Smith Construction of Bala Ltd.

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Subsurface Profile ..... Drawing No. 2

1.0 INTRODUCTION

In accordance with the written authorization in email dated February 17, 2026 and subsequent receipt of a signed proposal on February 18, 2026 by Mr. Dennis Mills, Soil Engineers Ltd. was retained to prepare a geotechnical assessment report for the proposed residential building located at 1011 Maple Avenue in the Township of Muskoka Lakes (Bala).

The primary objective of this report is to evaluate the subsurface conditions at the site and to provide the necessary geotechnical engineering recommendations for the design and construction of the proposed residential building. This assessment is based on a field investigation previously conducted at the site on September 25, 2025 (Reference No. 2509-C153).

2.0 SITE AND PROJECT DESCRIPTION

The subject site is located at 1011 Maple Avenue in the Township of Muskoka Lakes. It is situated at the intersection of Maple Avenue and Victoria Street. At the time of the investigation, the site was occupied by the existing Royal Canadian Legion Branch 424 building and associated parking areas.

In accordance with the Physiography of Southern Ontario, the subject site is located in the Physiographical Region of the Algonquin Highlands, abutting the Georgian Bay Fringe, where the landform generally consists of shallow till and rock ridges. The surficial geology in the vicinity consists of a Precambrian bedrock, overlying by shallow till cover, consistent with the Physiographical landform. The bedrock in this vicinity is characterized by undifferentiated felsic igneous and metamorphic rock (specifically granite) that is often exposed at the surface or covered by a discontinuous, thin layer of sandy silt to sand-textured till.

Based on the design package, the site is to be developed with a multi-use complex known as the Bala Legion Heritage Manor. This development will consist of a 4-storey residential building with walkout basement and a single storey podium, on-grade parking and access roadway.

3.0 FIELD WORK

The field work for this investigation was conducted on September 25, 2025, consisting of seven (7) test pits, identified as TP 1 to TP 7, inclusive. These test pits were advanced to depths ranging from 1.0 m to 3.2 m below the prevailing ground surface. The locations of the test pits are shown on the Test Pit Location Plan, Drawing No. 1.

The excavation was carried out by an excavator throughout the proposed building. The field operations, including the logging of subsurface stratigraphy and the collection of soil samples, were performed under the full-time supervision of a geotechnical technician from Soil Engineers Ltd. All recovered soil samples were transported to our laboratory for further examination and classification. The bedrock encountered at the base of each test pit was confirmed through visual inspection and the mechanical refusal of the excavation equipment.

4.0 SUBSURFACE CONDITIONS

The subsurface conditions encountered at the test pit locations are characterized by a layer of surface organics and earth fill, underlain by native sandy silt and Precambrian granite bedrock. The following sections provide a detailed description of the various strata identified during the investigation. The logs of test pits are presented as Figures 1 to 7, inclusive, and the subsurface findings are illustrated based on the test pit locations as shown on Drawing No. 2.

4.1 Earth Fill

A layer of surface organics, ranging from 20 cm to 30 cm in thickness, was encountered at all test pit locations. Beneath the surficial organics, a deposit of clay fill was identified, extending to depths between 0.5 m and 1.0 m below the existing ground surface. This fill material was found to contain organic inclusions and varied in consistency across the site.

4.2 Sandy Silt

A native deposit of loose sandy silt was encountered beneath the fill layers in TP 2 to TP 7, inclusive. This material represents the primary overburden soil at the site, though its thickness is limited by the underlying bedrock profile.

4.3 Bedrock

Sound granite bedrock was encountered at the base of all test pits, with the depth to the bedrock surface ranging from 1.0 to 3.2 m below the prevailing grade. The bedrock was identified by the mechanical refusal of the excavation equipment and confirmed through visual inspection of the bedrock interface. The profile of the bedrock surface appears to be undulating.

5.0 GROUNDWATER CONDITION

Groundwater seepage was observed within the overburden soil at the bedrock interface in all test pits at the time of the field investigation. It is expected that any water seepage will run on the surface of the bedrock towards the lower elevation based on the bedrock topography. The quantity of water seepage appeared to be moderate and will be subject to seasonal fluctuations.

6.0 DISCUSSION AND RECOMMENDATIONS

The investigation has disclosed that beneath the topsoil and earth fill, the site is underlain by native sandy silt and Precambrian granite bedrock. The groundwater seepage is noted within the overburden along the interface of the bedrock.

It is understood that the site will be developed with a residential building with basement and a single storey podium. The geotechnical findings warranting special consideration for the proposed project are presented below:

1. All vegetation, topsoil and organic mixed soil must be stripped prior to site grading and construction. Any topsoil and organic mixed soil may be re-used for landscaping in designated areas only. Any surplus must be removed off site.
2. After demolition of the existing structures, the debris and any underground utilities, if any, must be removed and disposed off-site. The cavities should be backfilled with selected on-site inorganic soils, free of organics and deleterious material, and compacted to engineered fill specifications.
3. The existing earth fill is unsuitable for supporting any structures in its current state. For reuse as structural backfill, or in pavement and slab construction, the fill must be subexcavated, sorted free of concentrated topsoil, organics and other deleterious materials, and properly recompacted in layers. If it is impractical to sort the fill, it must be wasted and replaced with properly compacted inorganic earth fill.

4. Where site grading with additional fill is required. the additional earth fill can be constructed in an engineered manner for building support, pavement and underground services construction.
5. The proposed structure can be supported on conventional spread and strip footings founded on bedrock or engineered fill. The footing subgrade must be inspected by the geotechnical engineer or a senior geotechnical technician to ensure that the revealed conditions are compatible with the foundation design requirements.
6. A Class 'B' bedding, consisting of 19-mm Crusher-Run Limestone (CRL) or equivalent, can be used for underground service construction.

The recommendations appropriate for the project are presented herein. One must be aware that the subsurface conditions, particularly the depth and profile of the sound granite bedrock, may vary between test pit locations. Should such variations become apparent during construction, a geotechnical engineer must be consulted to determine whether the following recommendations require revision.

6.1 **Site Preparation**

Where additional fill is required for site grading, the earth fill can be constructed in accordance with the engineering fill specifications to support foundation, underground services, and pavement construction. The engineering requirements for a certifiable fill are presented below:

1. The topsoil, organic soils and vegetation must be removed. Badly weathered soil should also be removed, visually examined to be free of organics and aerated before reuse for structural backfill.
2. The debris from any demolished structures and abandoned underground utilities must be removed and disposed off-site. The cavities must be backfilled with selected on-site material, free of organics, compacted to engineered fill specifications.
3. The existing earth fill is not suitable for structural use and must be subexcavated and sorted free of organic and deleterious material before reusing for structural backfill. If the material cannot be sorted, it must be removed off site.
4. The exposed soil subgrade must be inspected and proof-rolled prior to any fill placement. Any loose material identified must be sub-excavated and backfilled with organic free material, compacted to engineered fill specifications.
5. Inorganic soils must be used for engineered fill construction, and they must be uniformly compacted in lifts of 20 cm thick to at least 98% Standard Proctor Maximum Dry Density (SPMDD) with its moisture content controlled near its optimum. If the house foundations are to be built soon after the fill placement, the densification process for the engineered fill must be increased to 100% SPMDD.

6. If imported fill is to be used, it should be inorganic soils, free of deleterious or any material with environmental issue or contamination. Any potential imported earth fill from off site must be reviewed for geotechnical and environmental quality by the appropriate personnel as authorized by the developer or agency, before being hauled to the site.
7. If the engineered fill is compacted with the moisture content on the wet side of the optimum, the underground services and pavement construction should not begin until the pore pressure within the fill mantle has completely dissipated. This must be further assessed at the time of the engineered fill construction.
8. The engineered fill must not be placed during the period where freezing ambient temperatures occur either persistently or intermittently. This is to ensure that the fill is free of frozen soils, ice and snow. If the fill is to be left over the winter months, adequate earth cover, or equivalent, must be provided for protection against frost action.
9. The fill operation must be supervised and monitored on a full-time basis by a geotechnical technician under the direction of a geotechnical engineer.
10. The engineered fill envelope and finished elevations must be clearly and accurately defined in the field, and they must be precisely documented by a surveyor.
11. Any excavation carried out in certified engineered fill must be reported to the geotechnical consultant who supervised the fill placement in order to document the locations of excavation and/or to supervise reinstatement of the excavated areas to engineered fill status. If construction on the engineered fill does not commence within a period of 2 years from the date of certification, the condition of the engineered fill must be assessed for re-certification.
12. Despite stringent control in the placement of the engineered fill, variations in soil type and density may occur in the engineered fill. Therefore, the foundations must be properly reinforced and designed by the structural engineer. The total and differential settlements of 25 mm and 20 mm, respectively, should be considered in the design of the foundation founded on engineered fill.
13. The footing, slab-on-grade and underground services subgrade must be inspected by the geotechnical consulting firm which supervised the engineered fill placement. This is to ensure that the foundations and service pipes are placed within the engineered fill envelope, and the integrity of the fill has not been compromised by interim construction, environmental degradation and/or disturbance by any excavation.

6.2 **Foundation**

It is understood that the proposed residential building is intended to be supported on conventional spread and strip footings founded on either sound granite bedrock or engineered fill. The recommended bearing pressures for the design of conventional footings are provided below:

Foundations on Sound Granite Bedrock:

- Factored Ultimate Bearing Pressure at Ultimate Limit State (ULS) = 2000 kPa.

Foundations on Engineered Fill:

- Maximum Soil Bearing Pressure at Serviceability Limit State (SLS) = 150 kPa.
- Factored Soil Bearing Pressure at Ultimate Limit State (ULS) = 300 kPa.

The total and differential settlements for foundations founded onto the engineered fill designed with bearing pressure at SLS are anticipated to be within 25 mm and 20 mm, respectively. Where the foundations are founded onto the bedrock, the total and differential settlements of the structure are negligible as the bedrock is considered an unyielding material where the bearing pressure at ULS will govern the foundation design.

It is recommended that the foundation be constructed on a single soil or bedrock subgrade to avoid differential settlement and proper foundation design. Where stepped down footings are required, it should be stepped at a gradient of 2H:1V. Where the individual footings are to be constructed in close proximity to each other, the lower footing must be constructed prior to the footing at higher elevation and that they must maintain at a gradient of 10H:7V from each other.

The foundation subgrade must be inspected by either a geotechnical engineer or a senior geotechnical technician under the supervision of a geotechnical engineer to ensure that the revealed conditions are compatible with the foundation design requirements.

For foundations seated directly on sound, non-frost susceptible granite bedrock, there is no minimum burial depth requirement for frost protection. However, any foundations founded on engineered fill, or those exposed to freezing temperatures in unheated areas, must be provided with a minimum of 1.6 m of earth cover for frost protection.

The foundations should meet all requirements specified in the latest Ontario Building Code. For seismic consideration, the structure should be designed to resist an earthquake force using Site Classification 'C'. Alternatively, a Multi-Channel Analysis of Surface Waves (MASW) test can be considered to further evaluate its site classification as well as to determine the average shearwave velocity (Vs_{30}) of the subject site. If Vs_{30} is higher than 760 m/s and that there is less than 3.0 m of soil separation between the underside of footing and the bedrock, the Site Classification 'B' may be used.

For foundation wall backfill, free-draining non-frost susceptible soil should be used. Where in-situ inorganic soil is used for foundation wall backfill, a polyethylene slip membrane should be implemented, extending to the depth of frost penetration, to prevent any potential damage due to frost action. The foundation wall backfill must be compacted to at least 95% SPMDD in lifts no more than 20 cm in thickness.

6.3 Underground Structure

The perimeter walls of the below ground portion of the basement structure must be designed to sustain lateral earth pressure. Any applicable surcharge loads adjacent to the underground structure, such as those from traffic or building loads, hydrostatic pressure, if any, must also be considered in the design of the foundation walls.

The foundation walls must be damp-proofed and provided with a perimeter subdrain system at the wall base. The basement floor subgrade should consist of sound granite bedrock or engineered fill compacted to 100% SPMDD. The floor slab should be constructed on a 20 cm thick granular base consisting of 19-mm CRL, or an approved equivalent, compacted to 100% SPMDD.

The ground surface must be graded to direct water away from the structures to prevent ponding of water adjacent to the foundation walls. Appropriate measures for surface water management should be maintained throughout the life of the structure to ensure the integrity of the foundation system.

6.4 Underground Services

The subgrade for underground services should consist of sound granite bedrock or properly compacted engineered fill. Where loose native sandy silt or existing earth fill is encountered at the service subgrade, it must be subexcavated and replaced with bedding material compacted to at least 98% SPMDD. A Class 'B' bedding, consisting of compacted 19-mm CRL or equivalent, is recommended for the construction of the underground services.

The sewer joints must be leak-proof or wrapped with an appropriate waterproof membrane to prevent subgrade migration. Similarly, pipe joints connecting into manholes and catch basins must be leak-proof to prevent the migration of fines through the joints. Openings to subdrains and catch basins should be shielded with a fabric filter to prevent blockage by silting.

A soil cover equal to the pipe diameter should be in place at all times after pipe installation to prevent pipe flotation in the event the trench is deluged with water from precipitation or seasonal snowmelt.

6.5 Backfilling in Trenches and Excavated Areas

The native inorganic soil is generally suitable for reuse as structural backfill. Backfill in service trenches or beside foundation walls should be compacted to at least 95% SPMDD in lifts not exceeding 20 cm in thickness. The lift thickness should be further verified by test strips performed with the specific compaction equipment used on-site. Given the Precambrian environment of the site, any boulders or rock fragments larger than 15 cm in size are not suitable for use in structural backfill and must be removed.

In area within the zone 1.0 m below the pavement subgrade, the material must be compacted to at least 98% SPMDD to ensure long-term stability. The moisture content should be maintained at 2% to 3% drier than the optimum to provide necessary stiffness for pavement support.

In standard construction practice, ground settlement often occurs adjacent to manholes, catch basins, service crossings, and foundation walls. As such, in areas that are inaccessible to heavy compaction equipment, a sand backfill should be used, as it can be effectively compacted using smaller or light-duty vibratory equipment.

6.6 Pavement Design

The recommended pavement structure for on grade access roadways and parking is presented in Table 1.

Table 1 - Pavement Design

Course	Thickness (mm)	OPS Specifications
Asphalt Surface	40	HL3
Asphalt Binder Light-Duty Parking Heavy Duty/Fire Route	 40 50	HL8
Granular Base	150	Granular 'A' or equivalent
Granular Sub-base Light-Duty Parking Heavy Duty/Fire Route	 250 350	Granular 'B' or equivalent

In preparation of the pavement subgrade, the final surface must be proof-rolled and inspected. Any soft spots identified, such as areas of loose native sandy silt or old fill, must be rectified by subexcavation and replacement with selected inorganic material, uniformly compacted to at least 100% SPMDD. The granular bases must also be compacted to 100% SPMDD.

For the paved parking area, an intercept subdrain system should be installed along the perimeter and at lower elevations where surface runoff may collect. This is necessary to prevent infiltrating precipitation from seeping into the granular bases, which could lead to frost damage. Catch basins with stub drains in all four directions should be provided, connecting through filter-sleeved weepers.

6.7 Soil Parameters

The recommended soil parameters for the project design are given in Table 2.

Table 2 - Soil Parameters

Unit Weight and Bulk Factor	**Bulk Unit Weight (kN/m^3)**	**Estimated Bulk Factor**	
		Loose	**Compacted**
Existing Earth Fill	20.0	1.20	0.98
Sandy Silt	21.0	1.25	1.00
Granite Bedrock	26.0	1.50	-
Lateral Earth Pressure Coefficients	**Active K_a**	**At Rest K_0**	**Passive K_p**
Existing Earth Fill	0.39	0.56	2.56
Sandy Silt	0.33	0.50	3.00
Granite Bedrock	0.17	0.29	5.88

Table 2 - Soil Parameters (Cont'd)

Estimated Coefficient of Permeability (K) and Percolation Time (T)	**K (cm/sec)**	**T (min/cm)**
Sandy Silt	10^{-5}	20
Estimated Electrical Resistivity		
Sandy Silt	4500 ohm·cm	
Coefficients of Friction		
Between Concrete and Granular Base	0.50	
Between Concrete and Sound Granite Bedrock	0.60	
Between Concrete and Sound Native Soils	0.35	

6.8 Excavation

Excavation must be carried out in accordance with Ontario Regulation 213/91. For excavation purposes, the types of soils encountered at the site are classified in Table 3.

Table 3 - Classification of Soils for Excavation

Material	**Type**
Bedrock	1
Existing Earth Fill, Sandy Silt	3

It should be noted that the water seepage from the excavation may be affected by seasonal fluctuations due recent precipitation events and/or the local snowmelt. During periods of heavy rain or spring thaw, the volume of seepage at the soil-bedrock interface may increase. While the observed groundwater is not expected to pose a significant challenge to the proposed construction.

During excavation, it is anticipated that any water seepage can be removed by conventional pumping from sumps.

Excavation into the sound granite bedrock, which was encountered at depths as shallow as 1.0 m, will likely require the use of heavy-duty pneumatic rock hammers or rock blasting. If blasting is used, an expert must be consulted to determine the blasting sequences and intensity to prevent damage to the existing surrounding residential buildings and buried utilities.

Since there are existing structures near the proposed development, a pre-construction survey must be completed. The potential impact from shock waves must be assessed by the blasting contractor to provide baseline data for assessing any future claims for damages. This survey should include photographs, videos, and visual inspections of neighboring properties.

Vibration monitoring must be carried out during all blasting operations to aid in setting charges and to confirm that vibrations remain within allowable tolerances. The results of the vibration monitoring, combined with the pre-construction survey, will serve to protect the project from potential damage claims.

7.0 LIMITATIONS OF REPORT

This report was prepared by Soil Engineers Ltd. for the account of the Ted Smith Construction of Bala Ltd, and for review by their designated consultants, contractors, financial institutions, and government agencies. The material in the report reflects the judgment of Tat Chun Man, B.Eng., EIT and Kin Fung Li, P.Eng. in light of the information available to it at the time of preparation.

Use of the report is subject to the conditions and limitations of the contractual agreement. Any use which a Third Party makes of this report, and/or any reliance on decisions to be made based on it is the responsibility of such Third Parties. Soil Engineers Ltd. accepts no responsibility for damages, if any, suffered by any Third Party as a result of decisions made or actions based on this report.

SOIL ENGINEERS LTD.

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Kin Fung Li, P.Eng.
TCM/KFL

LICENSED PROFESSIONAL ENGINEER
March 26, 2024
K. F. LI
100169280
PROVINCE OF ONTARIO

JOB NO.: 2602-S029

LOG OF TEST PIT 1

FIGURE NO.: 1

PROJECT DESCRIPTION: Proposed Residential Building

METHOD: Backhoe

PROJECT LOCATION: 1011 Maple Avenue, Township of Muskoka Lakes (Bala)

EXCAVATION DATE: Sept. 25, 2025

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES: Number	SAMPLES: Type	SAMPLES: N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
226.8	Ground Surface							
0.0	20 cm ORGANICS				0			
226.6 / 0.2	EARTH FILL silty clay with organics							
225.8 / 1.0	END OF TEST PIT REFUSAL AT BEDROCK				1			▽ Water seepage @ bedrock surface
					2			
					3			

Soil Engineers Ltd.

JOB NO.: 2602-S029

LOG OF TEST PIT 2

FIGURE NO.: 2

PROJECT DESCRIPTION: Proposed Residential Building

METHOD: Backhoe

PROJECT LOCATION: 1011 Maple Avenue, Township of Muskoka Lakes (Bala)

EXCAVATION DATE: Sept. 25, 2025

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES: Number	SAMPLES: Type	SAMPLES: N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
226.9	Ground Surface							
0.0	30 cm ORGANICS				0			
226.6								
0.3	EARTH FILL silty clay with organics							
226.1								
0.8	Loose SANDY SILT				1			
224.8					2			Water seepage @ bedrock surface
2.1	END OF TEST PIT REFUSAL AT BEDROCK				3			

JOB NO.: 2602-S029

LOG OF TEST PIT 3

FIGURE NO.: 3

PROJECT DESCRIPTION: Proposed Residential Building

METHOD: Backhoe

PROJECT LOCATION: 1011 Maple Avenue, Township of Muskoka Lakes (Bala)

EXCAVATION DATE: Sept. 25, 2025

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES: Number	SAMPLES: Type	SAMPLES: N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
227.3	Ground Surface							
0.0	30 cm ORGANICS				0			
227.0								
0.3	EARTH FILL							
	silty clay with organics							
226.7								
0.6	Loose							
	SANDY SILT				1			
					2			
					3			
224.1								
3.2	END OF TEST PIT REFUSAL AT BEDROCK							

▽ Water seepage @ bedrock surface

Soil Engineers Ltd.

JOB NO.: 2602-S029

LOG OF TEST PIT 4

FIGURE NO.: 4

PROJECT DESCRIPTION: Proposed Residential Building

METHOD: Backhoe

PROJECT LOCATION: 1011 Maple Avenue, Township of Muskoka Lakes (Bala)

EXCAVATION DATE: Sept. 25, 2025

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES: Number	SAMPLES: Type	SAMPLES: N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
226.9 0.0	Ground Surface 20 cm ORGANICS				0			
226.7 0.2	EARTH FILL silty clay with organics							
225.9 1.0	Loose SANDY SILT				1			
225.1 1.8	END OF TEST PIT REFUSAL AT BEDROCK				2 3			Water seepage @ bedrock surface

Soil Engineers Ltd.

JOB NO.: 2602-S029

LOG OF TEST PIT 5

FIGURE NO.: 5

PROJECT DESCRIPTION: Proposed Residential Building

METHOD: Backhoe

PROJECT LOCATION: 1011 Maple Avenue, Township of Muskoka Lakes (Bala)

EXCAVATION DATE: Sept. 25, 2025

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES: Number	SAMPLES: Type	SAMPLES: N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
227.1	Ground Surface							
0.0	20 cm ORGANICS				0			
226.9 / 0.2	EARTH FILL silty clay with organics							
226.3 / 0.8	Loose SANDY SILT				1			Water seepage @ bedrock surface
225.6 / 1.5	END OF TEST PIT REFUSAL AT BEDROCK				2			
					3			

Soil Engineers Ltd.

JOB NO.: 2602-S029

LOG OF TEST PIT 6

FIGURE NO.: 6

PROJECT DESCRIPTION: Proposed Residential Building

METHOD: Backhoe

PROJECT LOCATION: 1011 Maple Avenue, Township of Muskoka Lakes (Bala)

EXCAVATION DATE: Sept. 25, 2025

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES: Number	SAMPLES: Type	SAMPLES: N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
226.7	Ground Surface							
0.0	20 cm ORGANICS				0			
226.5								
0.2	EARTH FILL							
	silty clay with organics							
226.2								
0.5	Loose							
	SANDY SILT				1			
225.3								
1.4	END OF TEST PIT REFUSAL AT BEDROCK				2			Water seepage @ bedrock surface
					3			

Soil Engineers Ltd.

JOB NO.: 2602-S029

LOG OF TEST PIT 7

FIGURE NO.: 7

PROJECT DESCRIPTION: Proposed Residential Building

METHOD: Backhoe

PROJECT LOCATION: 1011 Maple Avenue, Township of Muskoka Lakes (Bala)

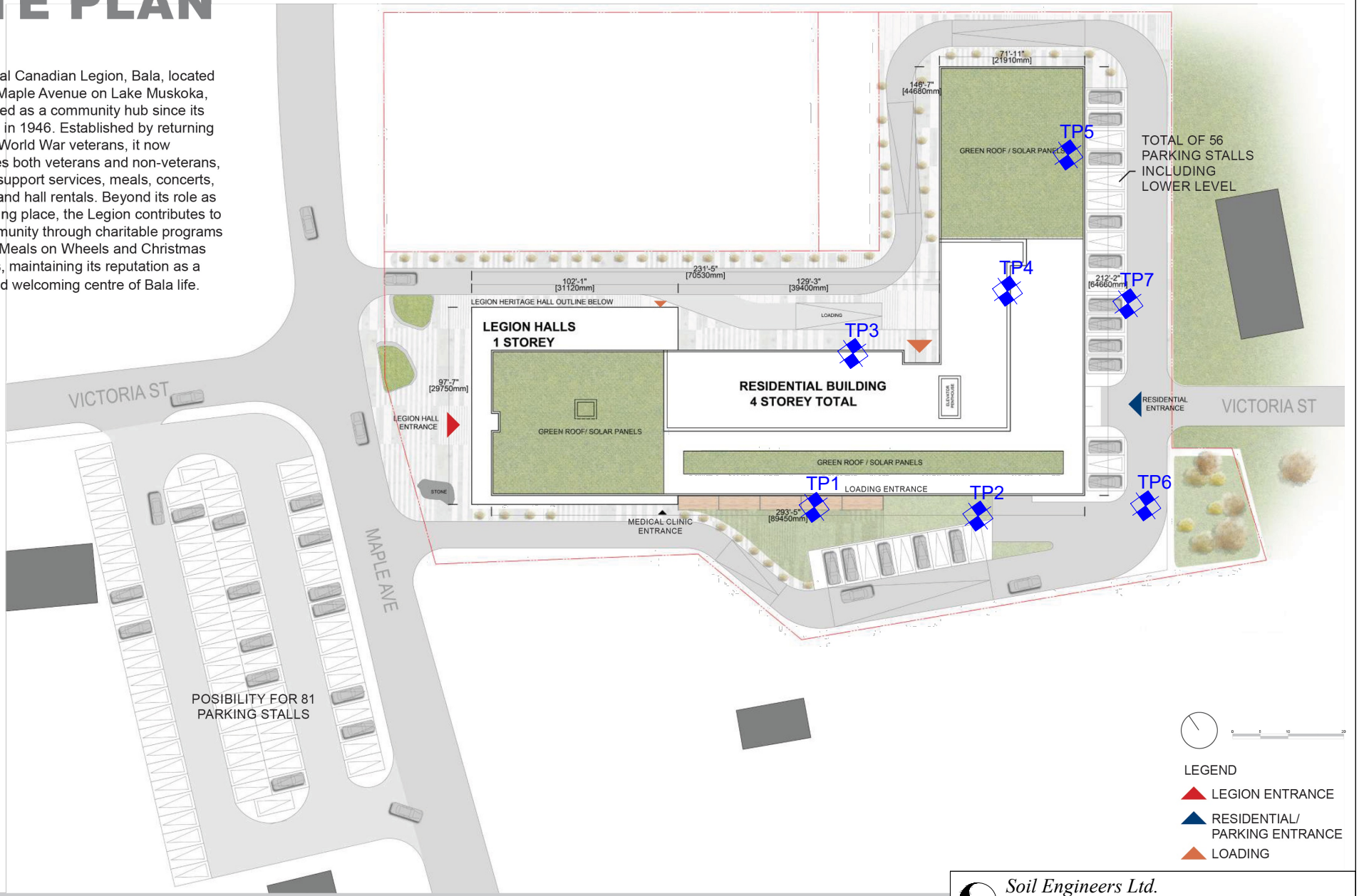
EXCAVATION DATE: Sept. 25, 2025

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES: Number	SAMPLES: Type	SAMPLES: N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
226.9	Ground Surface							
0.0	20 cm ORGANICS				0			
226.7 / 0.2	EARTH FILL silty clay with organics							
225.9 / 1.0	Loose SANDY SILT				1			Water seepage @ bedrock surface
225.4 / 1.5	END OF TEST PIT REFUSAL AT BEDROCK				2 3			

Soil Engineers Ltd.

SITE PLAN

The Royal Canadian Legion, Bala, located at 1011 Maple Avenue on Lake Muskoka, has served as a community hub since its founding in 1946. Established by returning Second World War veterans, it now welcomes both veterans and non-veterans, offering support services, meals, concerts, games, and hall rentals. Beyond its role as a gathering place, the Legion contributes to the community through charitable programs such as Meals on Wheels and Christmas hampers, maintaining its reputation as a warm and welcoming centre of Bala life.



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Test Pit Location Plan

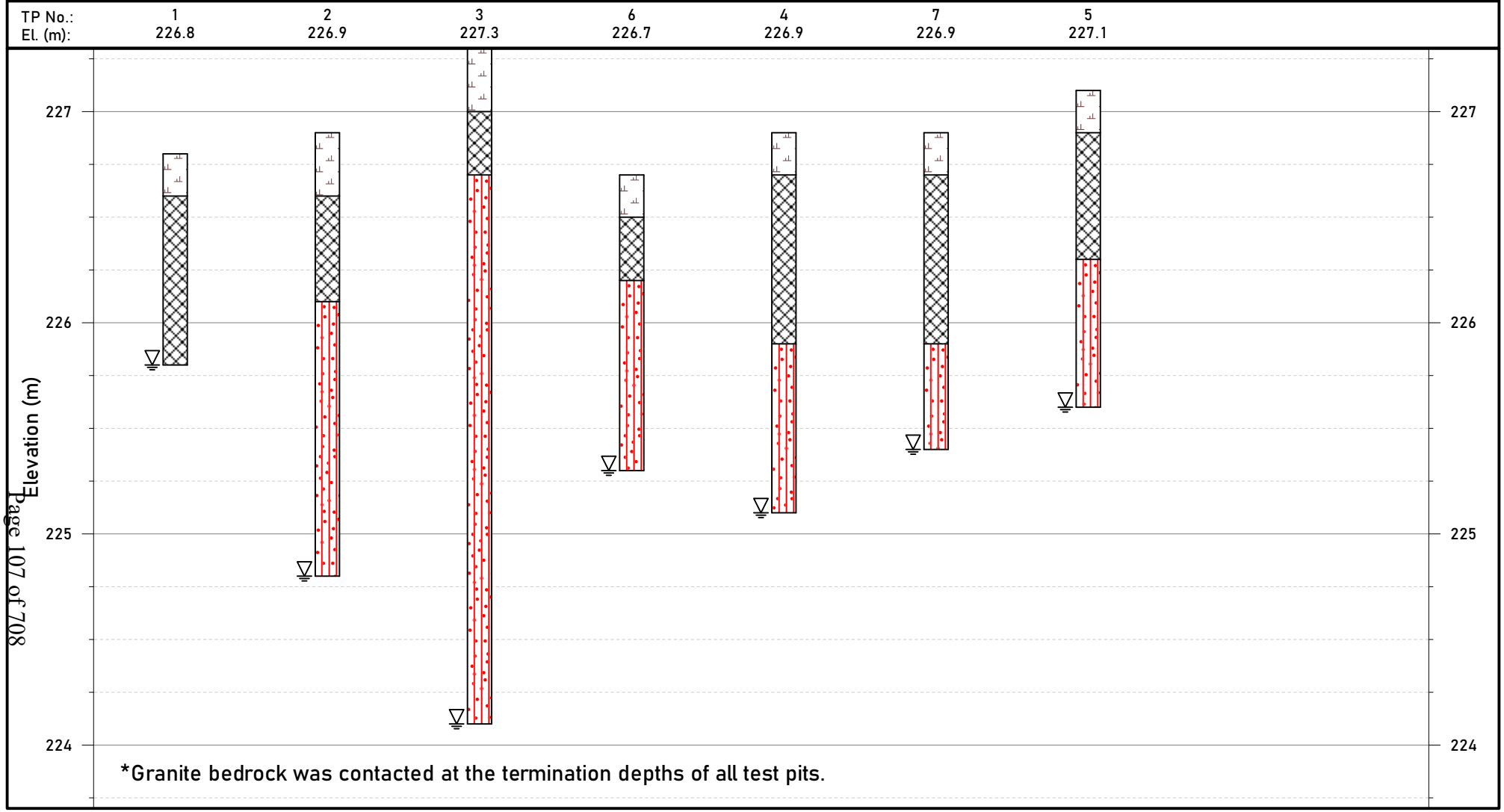
SITE: 1011 Maple Avenue, Township of Muskoka Lakes (Bala)			
DESIGNED BY: P.K.	**CHECKED BY:** K.L.	**DWG NO.:** 1	
SCALE: 1:800	**REF. NO.:** 2602-S029	**DATE:** March 2026	**REV** -

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SUBSURFACE PROFILE
DRAWING NO. 2
SCALE: AS SHOWN

JOB NO.: 2602-S029
REPORT DATE: March 2026
PROJECT DESCRIPTION: Proposed Residential Building
PROJECT LOCATION: 1011 Maple Avenue, Township of Muskoka Lakes (Bala)

LEGEND
FILL | ORGANIC | SANDY SILT
WATER LEVEL (END OF EXCAVATION)



*Granite bedrock was contacted at the termination depths of all test pits.

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FUNCTIONAL SERVICING REPORT

BALA LEGION RE-DEVELOPMENT

1011 MAPLE AVENUE, TOWNSHIP OF MUSKOKA LAKES

PEL PROJECT #: 26-11893M

DATE: APRIL 23RD, 2026

PINESTONE ENGINEERING LTD.

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Record of Revisions:

Revision Number	Date	Description
-	April 23rd, 2026	Issued for Rezoning Submission

Prepared by:	Reviewed by:
	
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1.0 INTRODUCTION

1.1 Background

The subject property, municipally known as 1011 Maple Avenue in Bala, has an approximate area of 0.77 hectares and is currently developed with the Bala Legion building, which remains in operation. The site includes a combination of asphalt and gravel driveways and parking areas, with access provided from both Maple Avenue and Mill Street. The eastern portion of the site, formerly a baseball diamond, consists of grassed areas in fair condition with intermittent exposed soil.

The property is legally described as Lot 98 and Parts of Lots 79, 80, 82, 84, 99, 100, and 101, and Part of Victoria Street (Closed by DM24989), Registered Plan 19, in the Geographic Township of Medora, Township of Muskoka Lakes, District Municipality of Muskoka. The site is bounded by the Bala arena to the north, an existing lumber mill to the east, residential development to the south, and Maple Avenue to the west.

The site location is illustrated on Figure 1.

The owner is proposing to redevelop the property with a new Royal Canadian Legion Hall connected to a four-storey, 128-unit residential apartment building. Parking will be provided at grade beneath and around the building. Site access will continue to be provided from both Maple Avenue and Mill Street.

1.2 Purpose and Scope

Pinestone Engineering Ltd. (PEL) has been retained by the developer to prepare this Functional Servicing Report (FSR) in support of a Zoning By-law Amendment application. The purpose of this report is to review the existing municipal servicing infrastructure in the vicinity of the site and to provide recommendations for sanitary servicing, water supply, and stormwater management in accordance with the requirements of the Township of Muskoka Lakes, the District Municipality of Muskoka (DOM), and the Ministry of the Environment, Conservation and Parks (MECP).

2.0 REFERENCE REPORTS

The following reports and studies have been used for reference in the preparation of this servicing and stormwater management plan:

i) *Ministry of the Environment and Energy's Storm Water Management Planning and Design Manual, March 2003.*

ii) *Engineering Design Criteria and Standards Manual, prepared by The District Municipality of Muskoka and Area Municipalities, July 2024.*



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ROYAL CANADIAN LEGION - BALA LEGION HERITAGE MANOR
1011 MAPLE AVENUE, BALA
TOWNSHIP OF MUSKOKA LAKES

LOCATION PLAN

DATE:	SCALE:	PROJECT No.	FIGURE No.
APR 2026	N.T.S.	26-11893M	FIGURE 1

iii) *Sediment Control Planning Central Region Group, prepared by the Ministry of Natural Resources.*

iv) *Drainage Management Manual, prepared by the Ministry of Transportation, 1997.*

v) *Geotechnical Investigation, Soil Engineers Ltd., March 2026*

3.0 EXISTING CONDITIONS

3.1 General

The subject property is approximately 0.77 hectares in size and is currently developed with the existing Bala Legion building, which remains in operation. The site includes a mix of asphalt and gravel parking areas and internal drive aisles, with established access connections from both Maple Avenue and Mill Street.

The eastern portion of the property, formerly used as a baseball diamond, consists of generally level grassed areas in fair condition with intermittent exposed soil. The remaining portions of the site are characterized by developed areas associated with the existing building and parking infrastructure.

The property is located within the Bala urban servicing boundary, where municipal water and sanitary services are available for connection. Existing municipal infrastructure is located within Maple Avenue and Mill Street and will be utilized to service the proposed development.

3.2 Topography

A topographic survey of the site was completed by Rudy Mak Surveying Ltd. in November 2025. Based on our review of the survey, the site generally slopes from the north toward the south, with localized variations associated with the existing building, parking areas, and internal access drive aisles. Overall site grades are considered moderate, with areas of flatter grades and localized steeper transitions.

Site elevations are interpreted to range from approximately 228.75 m ASL in the northwest portion of the site to approximately 225.50 m ASL along the southern limits, adjacent to the rear yards of the existing residential properties fronting onto River Street.

3.3 Drainage and Conveyance Features

Based on our review of available background information, record drawings, and field investigations, an existing storm sewer system has been identified traversing the subject property. This system is not well documented in available municipal records and appears to function as a conveyance route for both upstream municipal drainage and external contributing areas.

An upstream storm sewer outfall is located between 3161 and 3163 Muskoka Road 169 (Frank Miller Memorial Route), which discharges into the subject lands in the vicinity of the Bala Arena. This outfall conveys drainage from an existing storm sewer system at the intersection of Muskoka Road 169 and Elm Street, which collects runoff from the District right-of-way as well as overland drainage conveyed south along Elm Street.

From the outfall location, flows enter the subject site at the northeast corner of the arena (back of the arena) and are conveyed into an existing storm sewer system located beneath the former baseball diamond. This storm sewer conveys flows in a generally southerly direction through the site. The system continues beyond the southern property boundary, traversing the adjacent residential property at 1028 River Street, before connecting to the municipal storm sewer system within River Street. Flows are ultimately conveyed eastward through the River Street system toward the River Road sanitary pump station (SPS) property, where the storm sewer outfalls to the Moon River.

In addition to upstream municipal drainage, several external contributing areas discharge into the system within the site. The Bala Arena property includes a catchbasin located at the southeast corner of the building, which collects roof drainage and surface runoff from the south side of the structure. An additional inlet pipe is located along the eastern limit of the site, conveying runoff from the adjacent lumber mill property. These flows connect to the main storm sewer within the site and converge at a structure located near the southern property boundary prior to continuing downstream toward River Street.

The major overland flow route for the broader contributing drainage area generally follows a southerly direction through the subject lands and adjacent residential properties toward River Street.

The existing storm sewer network and pipe configuration are illustrated on Existing Conditions Drawing EX-1, included in Appendix E. It is noted that the storm sewer alignments shown are approximate and are based on ground penetrating radar (GPR) investigations completed on the site in September 2025.

3.4 Site Geology

Based on our site reconnaissance and review of the topographic survey and Quaternary Geology of the Huntsville-Bracebridge area published by the Ministry of Northern Development and Mines, the geology in the area of the property is described as:

Bedrock-drift complex; thin, discontinuous drift cover (>50% cover)

A geotechnical investigation was also completed by Soil Engineers Ltd. (March 2026) and indicates the site is underlain by shallow overburden soils over sound granite bedrock, encountered at depths of approximately 1.0 m to 3.2 m. Subsurface conditions consist of a thin layer of topsoil and uncontrolled fill (containing organics), underlain by loose sandy silt of limited thickness. Groundwater seepage was observed at the soil/bedrock interface and is expected to fluctuate seasonally.

The existing fill is unsuitable for structural support and must be removed or reworked as engineered fill. Foundations are anticipated to be supported on either bedrock or engineered fill, with negligible settlement on bedrock and minor settlements on engineered fill. Underground services are to be founded on bedrock or properly compacted engineered fill with granular bedding, and any unsuitable subgrade soils must be sub-excavated and replaced.

Shallow bedrock conditions will influence site grading and servicing, and rock excavation should be anticipated. Groundwater at the bedrock interface will require standard dewatering and drainage measures. Given the shallow bedrock and native soil conditions, infiltration potential is expected to be limited.

Based on a review of the soil conditions and classifications outlined in the MTO Drainage Manual (Chart 1.08), the site soils have been classified as Hydrologic Soil Group “C” under the Soil Conservation Service methodology. Accordingly, curve numbers for the pervious areas have been adjusted within the hydrologic model to reflect Type C soil conditions. Supporting documentation, including soils mapping, the geotechnical report, and the referenced MTO chart, is provided in Appendix B.

4.0 PROPOSED DEVELOPMENT

The property owner is proposing to redevelop the lands municipally known as 1011 Maple Avenue in Bala with a mixed-use development incorporating both residential and commercial uses. The proposed development consists of a one-storey Royal Canadian Legion Hall connected to a four-storey, 128-unit residential apartment building, with parking provided both beneath portions of the building and around the perimeter of the site. Vehicular access is proposed from both Maple Avenue and Mill Street.

A conceptual site plan prepared by WMZH is included in Appendix A.

The proposed building will include approximately 931 m² of ground-floor assembly space associated with the Royal Canadian Legion Hall, together with 128 residential apartment units, consisting of:

- 68 one-bedroom apartments
- 60 two-bedroom apartments

Existing drainage patterns will generally be maintained under post-development conditions. The existing drainage system through the property is significant, and due to site topography, there is limited opportunity to redirect drainage to either the Mill Street or Maple Avenue rights-of-way.

As part of the development, the existing storm sewer extending through the site will be reconstructed and realigned around the proposed building envelope, generally along the north, east, and south property limits. The realigned storm sewer will be sized to convey external

drainage entering the site and will continue to function as the outlet for existing upstream drainage currently conveyed through the property.

Stormwater management controls will be provided on site to control post-development flows discharging to the south to pre-development levels. Quantity control measures are expected to include a combination of surface ponding storage, rooftop storage and/or green roof areas, and underground storage in the form of oversized storm sewers, superpipes, or storage tanks. Controlled flows will be directed through an oil/grit separator to provide enhanced-level water quality treatment prior to discharge to the downstream storm system.

The property is located within the Bala urban servicing boundary, with existing municipal services available for connection within Maple Avenue and Mill Street. A new water service is proposed from Mill Street to service the development, while a new gravity sanitary service is proposed to extend from Maple Avenue to the site.

A servicing agreement or enhanced connection permit with the District Municipality of Muskoka will be required to confirm and secure municipal servicing allocation prior to construction.

5.0 SANITARY SERVICING

5.1 Existing Infrastructure

Existing 200 mm diameter PVC sanitary sewers are located within both Maple Avenue and Mill Street and convey sewage by gravity from north to south. The Maple Avenue sanitary sewer is approximately 1.0 m lower than the Mill Street sewer and, based on the existing site grades, represents the more feasible connection point for providing gravity sanitary servicing to the proposed development.

Sewage from both Maple Avenue and Mill Street ultimately flows south toward River Street and is conveyed to the River Street sanitary pump station (SPS). From the SPS, sewage is pumped to the Bala Wastewater Treatment Plant (WWTP) for treatment.

5.2 Design Flows & Proposed Servicing Strategy

Contributing sanitary sewage flows for the proposed development were calculated in accordance with the design criteria outlined in the *District Municipality of Muskoka Engineering Design Criteria and Standards Manual (2024)*.

Residential population densities were assigned on a unit-type basis. As the District's criteria do not provide a detailed population breakdown for specific apartment unit types (e.g., one-bedroom and two-bedroom units), the *City of Barrie Sanitary Infrastructure Design Standard (2026)* was referenced to establish appropriate population density assumptions for the proposed apartment component of the development.

These population assumptions were subsequently used to determine the average day

sanitary flow, peak sanitary flow, and applicable peaking factors in accordance with the District's servicing standards. The following design criteria were applied:

- Residential average sewage flow rate of 450 L/capita/day.
- Commercial average sewage flow rate of 28 m³/ha/day.
- Extraneous (infiltration/inflow) allowance of 0.28 L/s/ha.
- Residential peaking factor determined using the Babbitt/Harmon equation.
- Commercial peaking factor of 2.0.
- Population density of 1.8 persons per unit (ppu) for one-bedroom apartment units.
- Population density of 3.0 persons per unit (ppu) for two-bedroom apartment units.

These parameters form the basis of the sanitary design flow calculations presented herein.

Based on the above-noted population density assumptions and a total of 128 proposed apartment units, the estimated residential population to be serviced by the development is 304 persons. In addition, the development includes approximately 931 m² of commercial floor area.

Applying the District's average flow rates, applicable peaking factors, and the prescribed extraneous (infiltration/inflow) allowance, the total peak sanitary sewage flow generated by the proposed development is calculated to be approximately 6.75 L/s.

A detailed sanitary sewer design sheet outlining the flow calculations and assumptions is appended to this memorandum for review.

5.3 Proposed Sanitary Servicing

The proposed development is intended to be serviced via a connection to the existing 200 mm diameter gravity sanitary sewer located within Maple Avenue. A new 200 mm diameter sanitary service lateral is proposed to connect to existing sanitary maintenance hole EX SANMH38A and extend to the building's mechanical room.

The preliminary layout of the proposed on-site sanitary collection system is illustrated on Drawing SERV-1, included in Appendix E.

A request for District hydraulic modelling has previously been submitted and is currently under review by the District and their consultant. This analysis is intended to confirm the availability of capacity within the downstream municipal sanitary sewer system, including the River Street sanitary pump station (SPS), and ultimately the Bala Wastewater Treatment Plant (WWTP). At the time of writing, the results of the modelling analysis are not yet available and, as such, have not been incorporated into this report.

6.0 WATER SERVICING

6.1 Existing Infrastructure

A 150 mm diameter PVC watermain is located within Maple Avenue and currently services the existing Bala Legion property. A 250 mm diameter PVC watermain is also located within Mill Street and presents an alternative servicing option to accommodate a larger water service connection to the site.

6.2 Proposed Water Demands

Water supply servicing for the proposed development has been assessed in accordance with the *District Municipality of Muskoka Engineering Design Criteria and Standards Manual (2024) and the MECP Design Guidelines for Drinking Water Systems (2008).*

In a manner consistent with the sanitary flow analysis, residential population densities have been assigned on a unit-type basis. As the District's criteria do not provide detailed population breakdowns for specific apartment unit types, reference was made to the *City of Barrie Drinking Water Infrastructure Design Standard (2026)* to establish appropriate population density assumptions for one-bedroom and two-bedroom apartment units.

The following design criteria were applied in the determination of domestic water demands:

- Maximum Day Factor of 2.75 and Peak Hour Factor of 4.13, in accordance with Table 3-1 of the MECP *Design Guidelines for Drinking Water Systems (2008)*.
- Residential average water demand of 450 L/capita/day.
- Commercial average water demand of 28 m³/ha/day.
- Population density of 1.8 persons per unit (ppu) for one-bedroom apartment units.
- Population density of 3.0 persons per unit (ppu) for two-bedroom apartment units.

Based on the above design assumptions, Table 1 summarizes the calculated average day, maximum day, and peak hour domestic water demands associated with the proposed development.

Table 1 - Domestic Water Demand

Population	Residential Flow (L/sec)	Commercial Flow (L/sec)	Peaking Factors (Based on MECP Guidelines)		Flows (L/sec)		
			Peak Hour	Maximum Day	Average Day	Peak Hour	Maximum Day
304	1.58	0.029	4.13	2.75	1.61	6.64	4.43

Fire demands for the proposed development were calculated in accordance with the Fire Underwriters Survey (FUS) as follows:

$$RFF = 220C(A)^{0.5}$$

Where,

RFF = the required fire flow in litres per minute.
C = coefficient related to the type of construction.
A = total floor area of building (excluding basements)

Table 2 - Water Requirements for Fire Fighting

Total Area (m^2)	Construction Coefficient "C"	Base Required Fire Flow (RFF) (L/min)	Occupancy and Contents Adjustment Factor	Automatic Sprinkler Protection Credit	Exposure Adjustment Charge	Design Required Fire Flow (RFF)
8,982	0.8	17,000	-14.2% (-2,417L/min)	-50% (-7,291L/min)	+12% (+1,750L/min)	9,000L/min (150L/sec)

Based on the guidance provided in the FUS and applying the relevant reductions and charges in flow for construction type (Type II), occupancy (Groups A-2, and C), sprinkler protection, and exposure distances, the estimated required fire flowrate for the development is 9,000L/min (150.0L/sec). Detailed FUS calculations are appended to this memo.

6.3 Proposed Water Servicing

Based on the estimated fire flow requirements for the proposed development, it is anticipated that water supply will be provided from the existing 250 mm diameter watermain located within Mill Street. A new 200 mm diameter water service is proposed to connect to this watermain and extend westerly beneath the Victoria Street road allowance to the subject property.

At the property line, the proposed 200 mm diameter water service will be split into a dedicated 200 mm diameter fire service and a 100 mm diameter domestic water service. Both services will extend from the property line to the building's mechanical room. A new fire hydrant is proposed to be installed on the 200 mm diameter fire service to provide on-site fire protection for the development.

The preliminary layout of the proposed water servicing strategy is illustrated on Drawing SERV-1, included in Appendix E.

A request for District hydraulic modelling has previously been submitted and is currently under review by the District and their consultant to confirm available system capacity, including pressures and flow rates, within the municipal water distribution system. At the time of writing, the results of the modelling analysis are not yet available and have therefore not been incorporated into this report.

A hydrant flow test has not been completed at this stage; however, it will be undertaken as part of the detailed design phase for Site Plan Approval to verify the available fire flows and corroborate the modelling results.

7.0 STORMWATER MANAGEMENT

7.1 Design Criteria

For site plan developments within the Township of Muskoka Lakes, and the District of Muskoka, both quality and quantity control of post-development storm runoff is required. In addition, the Municipality requires development proponents to identify the mitigation measures that will be put in place during construction to address erosion and sediment control.

Based on the District of Muskoka's, Engineering Design Criteria and Standards Manuals, all new developments must provide an enhanced level of stormwater quality treatment prior to discharging from a site. The design criteria, in accordance with the MECP SWM Planning and Design Manual (MECP,2003), for this site is as follows:

- Peak flow attenuation to pre-development levels for storm events up to and including the 100-year storm event based on Muskoka area IDF parameters. The grading design of the site should ensure that post-development flows from storm events in excess of the 100-year event are safely conveyed from the site.

- Water quality enhancement in accordance with a sensitive receiving outlet (80% removal of total suspended solids) through the use of accepted control techniques such as extended detention storage, enhanced grass swales, level spreaders, infiltration facilities, and best management practices.

- Preparation of a detailed erosion and sediment control and construction mitigation plan to be implemented as part of the construction program.

7.2 Hydrological Model Selection

A hydrologic model has been prepared for the site. The intent of the model was to provide quantitative estimates of runoff rates under both existing and proposed development conditions. These estimates can then be compared to determine the impact of the proposed development on the study area.

The rainfall runoff event simulation model Visual OTTHYMO was used to simulate watershed response to design rainfall events. Derivation of the design storm hyetographs were based on the "Chicago" 4-hour distribution and the 12-hour SCS Type II distribution using the intensity, duration, and frequency (IDF) data of the Muskoka area.

7.3 Design Storms

For the purposes of our stormwater management analysis, we have selected the 2-year, 5-year, 10-year, 25-year, 50-year, and 100-year design storms as part of our evaluation.

Rainfall intensity - duration frequency (IDF) values for the Muskoka area were entered into an equation that expresses the time – intensity relationship for specific frequencies, in the form of:

$$i = \frac{a}{(t+b)^c}$$

where: i = *intensity, mm/hr.*
t = *time of concentration, minutes*
a,b,c = *constants developed to fit published IDF curves*

The design storm parameters are outlined in Table 3, below:

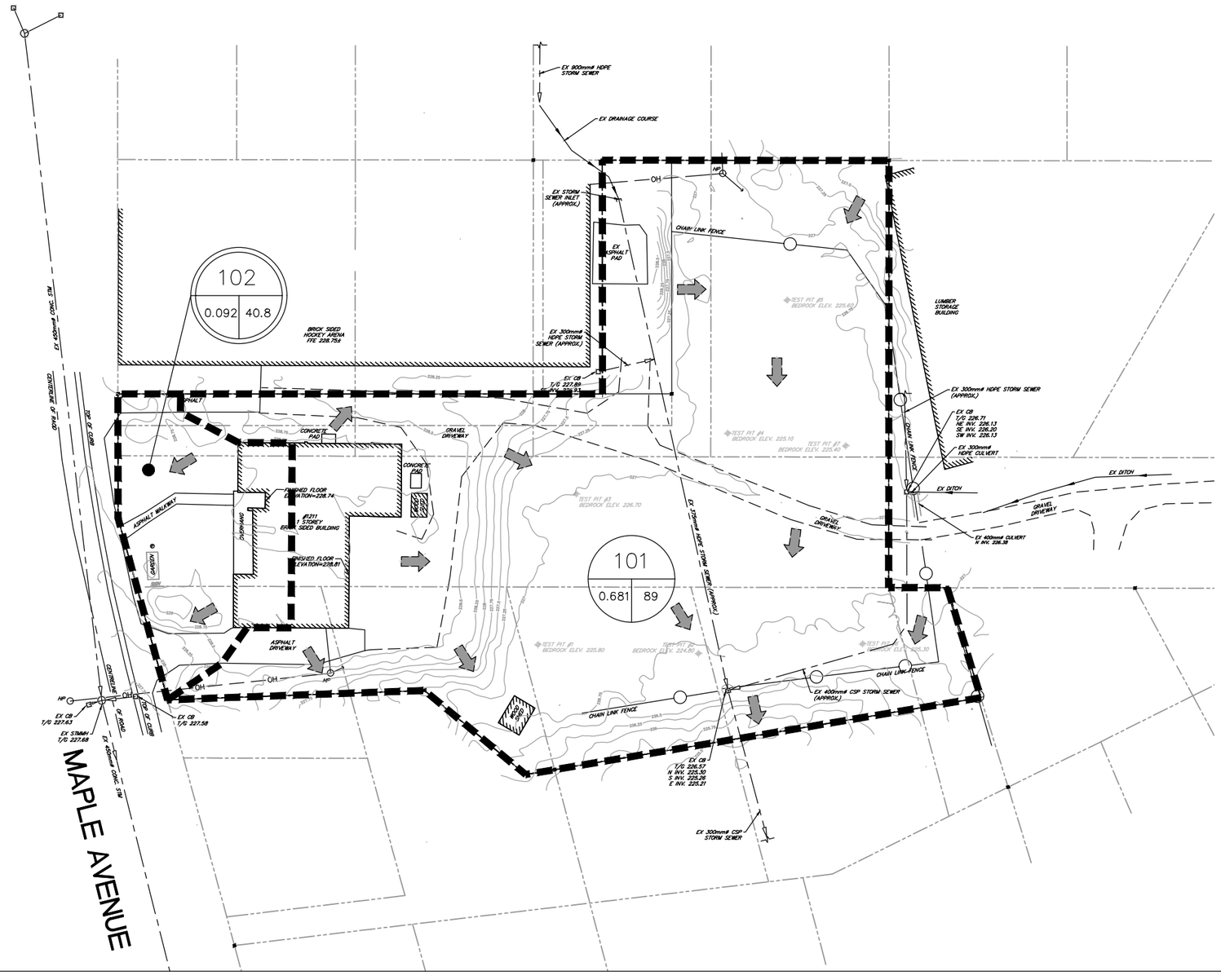
Table 3
Design Storm Parameters - Chicago Rainfall Distribution

Rainfall Event	Parameter			Duration (min)
	A	B	C	
2-year	789.5	7.83	0.83	240
5-year	950.0	6.75	0.820	240
10-year	1221.0	7.38	0.843	240
25-year	1452.0	7.30	0.848	240
50-Year	1466.0	6.55	0.832	240
100-year	1499.0	5.81	0.825	240

7.4 Drainage Catchments

Two (2) pre-development and three (3) post-development drainage catchments have been delineated for the site in order to estimate the peak runoff rate discharging offsite. The pre-development condition includes the existing Royal Canadian Legion building with asphalt/gravel driveways, lawn, and patches of exposed soils. The post-development catchments represent the proposed development and grading concept for the site broken down into rooftop, pavement, and landscape land uses. The pre-development and post-development catchment parameters are included in Appendix D. The pre-development and post-development catchment boundaries are illustrated on Figures 2 & 3 below.

Tables 4 and 5 outline the calculated pre-development and post-development peak runoff rates (without SWM) during the 2-100-year storm events.



LEGEND

- DIRECTION OF OVERLAND FLOW
- PRE-DEVELOPMENT CATCHMENT BOUNDARY
- 101 / 0.681 | 89 — PRE DEVELOPMENT RURAL/LANDSCAPE CATCHMENT NUMBER; PRE DEVELOPMENT CURVE NUMBER; PRE DEVELOPMENT CATCHMENT AREA (ha)
- 102 / 0.092 | 40.8 — PRE DEVELOPMENT URBAN CATCHMENT NUMBER; PRE DEVELOPMENT IMPERVIOUS AREA (%); PRE DEVELOPMENT CATCHMENT AREA (ha)

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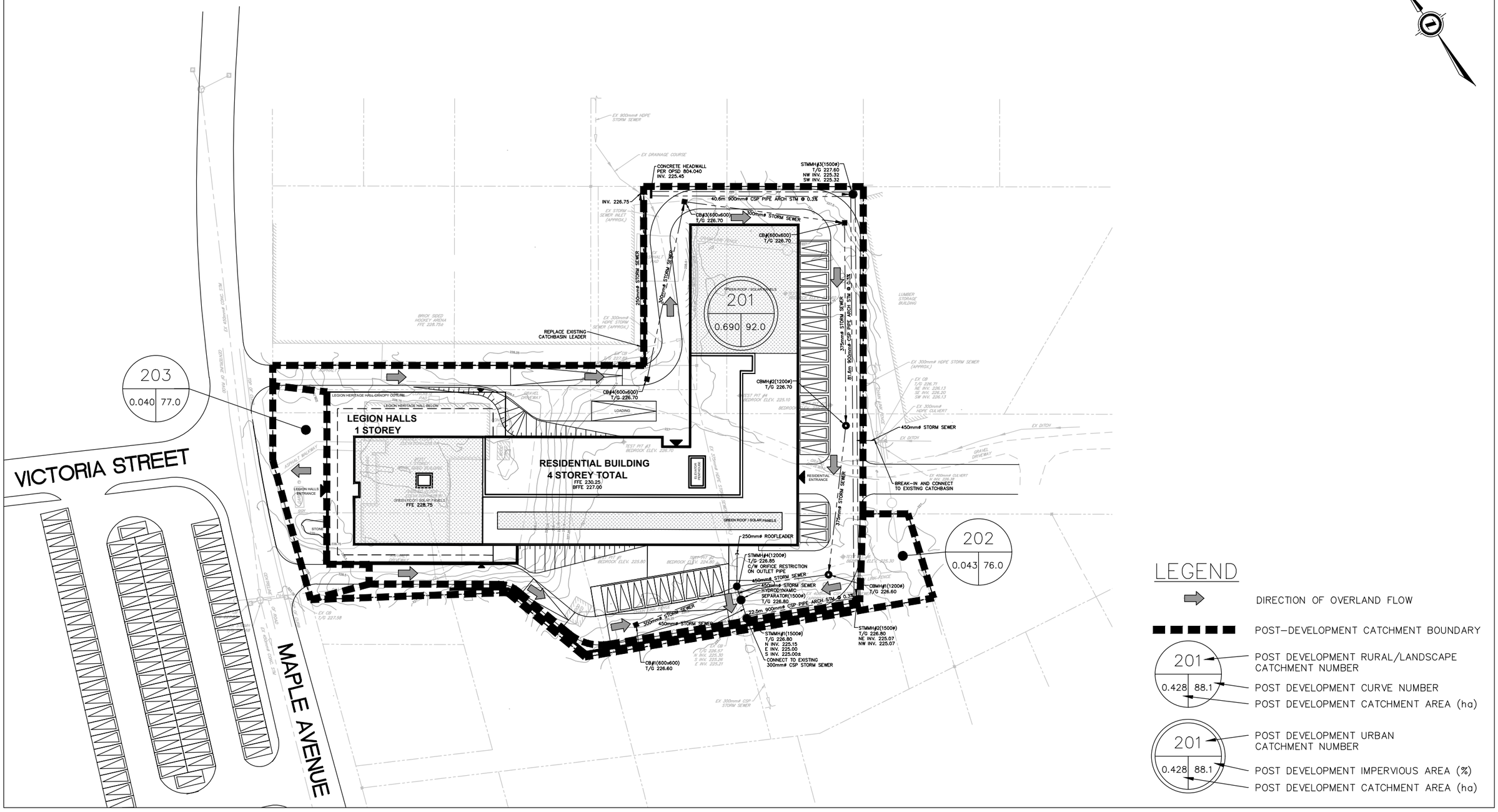
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TOWNSHIP OF MUSKOKA LAKES

PROJECT NO. 26-11893M

SCALE: 1:750 | DATE: APRIL 2026

PRE-DEVELOPMENT CATCHMENT PLAN

FIGURE 2



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PROJECT NO. 26-11893M

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POST DEVELOPMENT CATCHMENT PLAN

FIGURE 3

Table 4
Chicago 4-Hour Storm Event Runoff Rates

Catchment ID	Design Storm Events					
	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year
Pre-Development (m^3/s)						
101 (River Street)	0.034	0.053	0.068	0.088	0.102	0.113
102 (Maple Avenue)	0.011	0.016	0.019	0.023	0.027	0.030
Total Pre-Development Peak Runoff Rate	**0.037**	**0.058**	**0.075**	**0.098**	**0.114**	**0.127**
Post-Development (m^3/s)						
201 & 202 (River Street)	0.164	0.222	0.260	0.309	0.344	0.380
203 (Maple Avenue)	0.001	0.002	0.003	0.004	0.005	0.005
Total Post-Development Peak Runoff Rate	**0.166**	**0.224**	**0.262**	**0.313**	**0.349**	**0.385**

Table 5
12-Hour SCS Type II Storm Event Runoff Rates

Catchment ID	Design Storm Events					
	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year
Pre-Development (m^3/s)						
101 (River Street)	0.045	0.068	0.079	0.097	0.114	0.125
102 (Maple Avenue)	0.007	0.010	0.012	0.015	0.017	0.019
Total Pre-Development Peak Runoff Rate	**0.053**	**0.078**	**0.091**	**0.112**	**0.131**	**0.144**
Post-Development (m^3/s)						
201 & 202 (River Street)	0.096	0.125	0.139	0.161	0.181	0.195
203 (Maple Avenue)	0.002	0.003	0.004	0.005	0.006	0.006
Total Post-Development Peak Runoff Rate	**0.098**	**0.128**	**0.142**	**0.165**	**0.187**	**0.201**

Based on the calculated results of the hydrological modelling, it is expected that post-development flows directed to the River Street municipal storm sewer will increase due to the proposed construction of the building and paved surfaces. Since a portion of drainage area to the Maple Avenue ROW is being redirected to the River Street storm sewer, post-development flows are less than pre-development levels, therefore, no quantity control is required for catchment 203. Visual OTTHYMO input/output files are included in Appendix D.

7.5 Quantity Control

As identified through comparison of the pre-development and post-development conditions, redevelopment of the site to accommodate the proposed building and associated hard surfaces will result in an increase in runoff directed to the River Street storm sewer system.

Based on preliminary hydrologic modelling completed using Visual OTTHYMO for the 100-year SCS Type II design storm event, the site under pre-development conditions (Catchment 101) generates an overall runoff depth of approximately 51.65 mm, corresponding to a runoff volume of 352 m³. Under post-development conditions (Catchments 201 and 202), the site generates an overall runoff depth of approximately 69.66 mm, corresponding to a runoff volume of 509 m³. Accordingly, a storage volume of approximately 157 m³ is required to attenuate post-development flows to pre-development levels.

The required storage volume will be achieved through a combination of subsurface storm sewer storage (oversized conveyance infrastructure), subsurface modular storage tanks, and surface ponding within the parking area. The conceptual grading and servicing strategy illustrating these measures is provided on the drawings included in Appendix E.

Catchment 201, which encompasses the building rooftop, internal pavement areas, and a portion of landscaped surfaces, will be controlled through the proposed storm sewer system and parking lot surface storage areas. Flow attenuation will be achieved via a flow control device (orifice plate or tube) located within Storm Maintenance Hole STMMH#4. Controlled discharge from this catchment will outlet to the existing storm sewer traversing the adjacent residential property, ultimately conveying flows to the River Street municipal storm sewer system.

Detailed stage–storage–discharge relationships for the proposed stormwater management system will be developed and provided during the detailed design stage in support of the Site Plan Application.

Catchments 202 and 203, which include the building frontage along Maple Avenue, a portion of the driveway, and peripheral landscaped areas, will continue to discharge offsite under uncontrolled conditions, consistent with the existing drainage regime.

Refined hydrologic modelling incorporating finalized stormwater management design parameters will be completed at the detailed design stage as part of the Site Plan Application submission.

7.6 Quality Control Plan

The primary objective of the stormwater management plan for this development is to maintain acceptable water quality within the receiving storm sewers and the Moon River by maintaining existing site drainage patterns and flowrates.

In order to provide water quality enhancement to an “enhanced” level of protection (80% TSS removal) for this particular development, we have incorporated a “treatment train” approach consisting of the following elements:

- Provision of a hydrodynamic separator unit (ie. Hydroworks Hydrostorm) for oil and sediment removal from runoff generated in catchment 201. The Hydrodynamic Separator Sizing Program, by Hydroworks, will be utilized to design the appropriate

treatment unit. The hydrodynamic separator will be sized to provide 80% removal of total suspended solids. Design calculations using the manufacturer's software, and applicable reports will be provided at the detailed design stage in support of the site plan application.

- Lot grading using minimal surface slopes.
- Provision of "soft" landscaping where feasible.
- Suitable construction mitigation measures to be utilized during the site development.

At the detailed design stage, the potential treatment alternatives will be evaluated with respect to their applicability for this development and implemented in a manner to achieve an overall long term TSS removal of 80% for the site.

7.7 Storm Sewer Re-Route & Major Overland Flow Path

As previously noted, a new storm sewer reroute will be required to divert existing drainage from Muskoka Road 169 and other external contributing areas through the site and around the proposed development envelope. The intent of the design is to isolate this diversion sewer from the private on-site storm drainage system, with the understanding that the Township will likely require an easement and assume ownership of the diversion sewer, as it conveys flows from a relatively large upstream catchment within Bala.

The proposed diversion sewer is intended to connect to the existing 300 mm diameter storm sewer at the southern property limit via a new manhole structure (STMMH-1). This manhole will also receive controlled and treated stormwater discharge from the private on-site storm sewer system.

As part of the detailed design, it is recommended that the downstream storm sewer system extending through the property at 1028 River Street be assessed to confirm both its structural condition and hydraulic capacity to convey flows from the proposed reroute. It is anticipated that the existing storm sewer between the subject site and River Street may require replacement to accommodate the upstream flows.

In addition, the major overland flow route associated with the upstream catchment is currently conveyed through the 1028 River Street property. To mitigate overland flow risk, it is recommended that the downstream storm sewer from the subject site to River Street be upsized to convey the 100-year design flow event.

This downstream system will be further evaluated during the detailed design stage, once additional information becomes available and the ownership and responsibility for the existing storm sewer infrastructure are confirmed with Township staff.

8.0 EROSION AND SEDIMENT CONTROL

8.1 Mitigation Measures

Sedimentation and erosion control measures are required during construction and until such a time that site development has been completed, the driveway areas have been paved, and vegetation established.

The use of various siltation control measures will be implemented to protect the adjacent properties and receiving waterbodies from migrating sediments. These works include but may not be limited to:

- Installation of siltation control fencing along the downgradient perimeter of the development area.
- Provision of silt sacks within the proposed catch basins to capture sediment/debris.
- Installation of a construction entrance mat to mitigate vehicle tracking offsite.

Prior to carrying out site grading, the siltation barriers and silt sacks shall be in place. Any onsite storm sewer works will not be permitted to outlet to the existing municipal storm sewers until the site has been stabilized.

Other temporary installations of silt fence or other appropriate measures may be required during grading to minimize silt migration from the site. The measures will need to be removed, replaced, and relocated as required during the construction period until the site works have been completed and vegetation established. During construction, all stockpiled material will be placed up-gradient of the siltation controls with additional siltation fencing installation around the stockpiles.

8.2 Monitoring and Maintenance During Construction

It is the responsibility of the contractor and owner to maintain the siltation control devices until suitable grass cover has been established upon completion of construction.

A regular review of the facilities by the contractor should be carried out during the construction period to ensure that the facilities are being properly maintained, and if necessary, replaced. Inspection reports are to be completed monthly and distributed to the owner, contractor, and Township.

If site works are to continue through the winter and spring the engineer should be contacted by the owner to review the measures in place with the contractor on a regular basis to ensure that the facilities are adequate and in good working order.

All reasonable methods to control erosion and sedimentation are to be taken during construction. The contractor should inspect the siltation devices immediately after each

rainfall. Damaged devices should be repaired immediately, and additional devices installed if necessary. Silt should be removed from the fencing and related siltation devices when deposits are noticeable.

8.3 Contingency Plan

Should the erosion control measures fail and sediment migrate beyond the limits of the control works, the following tasks are required to be completed:

- The Township of Muskoka Lakes, the District of Muskoka, and the Ministry of the Environment should be notified of the event. The area will be assessed and cleaned up to the satisfaction of the agencies.

- Additional sedimentation facilities be installed in the area of the migration and down gradient to contain the sediment.

- The Ministry of Natural Resources should be contacted in the event that sediment reaches any adjacent water bodies.

9.0 SUMMARY AND CONCLUSIONS

The findings of this report are summarized as follows:

- The proposed development will be serviced by the existing 200 mm diameter gravity sanitary sewer located within Maple Avenue. The design sanitary flow has been provided to the District of Muskoka for review and confirmation of available capacity within the municipal sanitary collection system.

- Water supply for the proposed development is anticipated to be provided from the existing 250 mm diameter watermain located within Mill Street. A 200 mm diameter water service is proposed to extend from Mill Street to the site, which will branch at the property line into a 200 mm diameter fire service and a 100 mm diameter domestic water service. A fire hydrant is proposed at the Mill Street site access to provide on-site fire protection. Design flowrates for both domestic demand and fire flow have been provided to the District of Muskoka to confirm available pressures and flows within the municipal water distribution system.

- All on-site servicing is considered private plumbing and will be subject to approval under the Ontario Building Code. A Servicing Agreement or Enhanced Connection Permit from the District will be required to secure servicing allocation for the development.

- The existing storm sewer traversing the site will require replacement and rerouting to divert upstream drainage around the proposed development. Further assessment of the downstream storm sewer system discharging to River Street will be required at the detailed design stage as part of the Site Plan Approval process.

- The comparison of pre-development and post-development stormwater flowrates indicate that peak flows directed to the River Street municipal storm sewer will increase during all major storm events as a result of the increased impervious area.

- Attenuation of peak post-development flowrates to pre-development levels will be provided by utilizing parking lot surface ponding, sub-surface tank storage, and storm sewer storage.

- Stormwater quality control will be achieved using a “treatment train” of techniques including the installation of a hydrodynamic separator, reduced lot grading, and provision of soft landscaping where feasible.

It is recommended that:

- This report and drawings are submitted to the Township of Muskoka Lakes and the District of Muskoka in support of a zoning bylaw amendment application for this development.

APPENDIX A

Site Plan

SITE PLAN

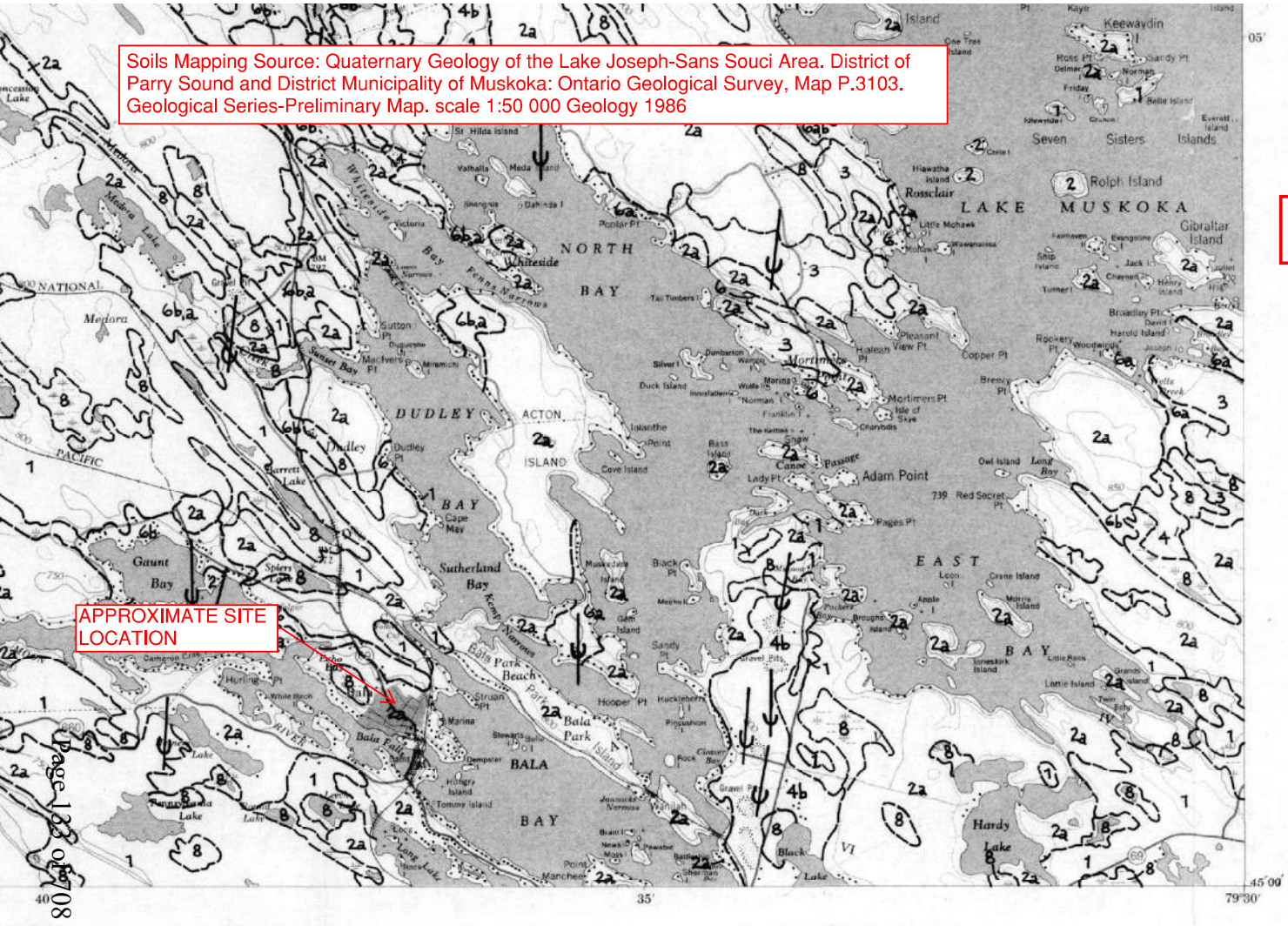
The Royal Canadian Legion, Bala, located at 1011 Maple Avenue on Lake Muskoka, has served as a community hub since its founding in 1946. Established by returning Second World War veterans, it now welcomes both veterans and non-veterans, offering support services, meals, concerts, games, and hall rentals. Beyond its role as a gathering place, the Legion contributes to the community through charitable programs such as Meals on Wheels and Christmas hampers, maintaining its reputation as a warm and welcoming centre of Bala life.



WZMH

APPENDIX B

Geotechnical Report & Soil Mapping


Soils Mapping Source: Quaternary Geology of the Lake Joseph-Sans Souci Area. District of Parry Sound and District Municipality of Muskoka: Ontario Geological Survey, Map P.3103. Geological Series-Preliminary Map. scale 1:50 000 Geology 1986
APPROXIMATE SITE LOCATION
NORTH BAY
DUDLEY
ACTON ISLAND
BAY
EAST BAY
LAKE MUSKOKA
Keewaydin
Seven Sisters Islands
Rolph Island
Gibraltar Island
Rosseclair
Whiteside
Medora
Gaunt Bay
Sutherland Bay
Bala Park Beach
Bala Park Island
BALA
Hardy Lake
Adam Point
Mortimers Pt
Pleasant View Pt
Copper Pt
Pages Pt
Red Secret Pt
Hooper Pt
Sandy Pt
Poplar Pt
Dudley Pt
Cape May
Cove Island
Bass Island
Canoe Passage
Lady Pt
Crane Island
Morris Island
Little Rock
Lottie Island
Hungry Island
Tommy Island
Manchee Point
Black Lake
Barrett Lake
Bala Falls
Bala Park
Struan Pt
Hurling Pt
Sutton Pt
Duquesne Pt
MacIvers Pt
Miramichi
Sunset Bay
Fenns Narrows
Whiteside Bay
Medora Lake
Valhalla
Meda Island
Shangrila
Dahinda I
Victoria
Tall Timbers
Duck Island
Silver I
Dunbarton
Warren
Marina
Wolfe I
Innisfallen
Norman
Franklin I
Hialeah
Brenny Pt
Rockery Pt
Woodleigh
Harold Island
Broadley Pt
Evangoline
Fairhaven
Snip Island
Jack I
Chevnes
Turner I
Henry Island
Little Mohawk
Wawanissa
Hiawatha Island
Celtic I
Ross Pt
Delmar
Norman
Sandy Pt
Friday
Belle Island
Everett Island
Kayett
Island
Pt
One Tree Island
St. Hilda Island
Islandthe Point
Owl Island
Long Bay
Snow
The Kettles
Charybdis
Isle of Skye
Mortimers Pt
Wells Creek
Jossin Pt
Duck
Black Pt
Muskedale Island
Gull Island
Leon
Phoebus
Breughel Island
Apple I
Travel Pits
Inneskirk Island
Grands Island
Twin
Echo
Cameron Creek
Spiers
Kemp Narrows
Huckleberry
Pinquishon
Joaquin Narrows
Nanlish
Brant I
Newton
Moss I
Pewabic
Battle
Sheridan
Gravel Pit
Clinker Bay
Rock
Stewarts
Dumpster
Marina
Bala Falls
Lake
Hurling
White Beach
Lake
Lake
Lake

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A REPORT TO
TED SMITH CONSTRUCTION OF BALA LTD.

A GEOTECHNIAL INVESTIGATION REPORT FOR PROPOSED RESIDENTIAL BUILDING

1011 MAPLE AVENUE

TOWNSHIP OF MUSKOKA LAKES
(BALA)

REFERENCE NO. 2602-S029

MARCH 2026

DISTRIBUTION

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1.0 INTRODUCTION

In accordance with the written authorization in email dated February 17, 2026 and subsequent receipt of a signed proposal on February 18, 2026 by Mr. Dennis Mills, Soil Engineers Ltd. was retained to prepare a geotechnical assessment report for the proposed residential building located at 1011 Maple Avenue in the Township of Muskoka Lakes (Bala).

The primary objective of this report is to evaluate the subsurface conditions at the site and to provide the necessary geotechnical engineering recommendations for the design and construction of the proposed residential building. This assessment is based on a field investigation previously conducted at the site on September 25, 2025 (Reference No. 2509-C153).

2.0 SITE AND PROJECT DESCRIPTION

The subject site is located at 1011 Maple Avenue in the Township of Muskoka Lakes. It is situated at the intersection of Maple Avenue and Victoria Street. At the time of the investigation, the site was occupied by the existing Royal Canadian Legion Branch 424 building and associated parking areas.

In accordance with the Physiography of Southern Ontario, the subject site is located in the Physiographical Region of the Algonquin Highlands, abutting the Georgian Bay Fringe, where the landform generally consists of shallow till and rock ridges. The surficial geology in the vicinity consists of a Precambrian bedrock, overlying by shallow till cover, consistent with the Physiographical landform. The bedrock in this vicinity is characterized by undifferentiated felsic igneous and metamorphic rock (specifically granite) that is often exposed at the surface or covered by a discontinuous, thin layer of sandy silt to sand-textured till.

Based on the design package, the site is to be developed with a multi-use complex known as the Bala Legion Heritage Manor. This development will consist of a 4-storey residential building with walkout basement and a single storey podium, on-grade parking and access roadway.

3.0 FIELD WORK

The field work for this investigation was conducted on September 25, 2025, consisting of seven (7) test pits, identified as TP 1 to TP 7, inclusive. These test pits were advanced to depths ranging from 1.0 m to 3.2 m below the prevailing ground surface. The locations of the test pits are shown on the Test Pit Location Plan, Drawing No. 1.

The excavation was carried out by an excavator throughout the proposed building. The field operations, including the logging of subsurface stratigraphy and the collection of soil samples, were performed under the full-time supervision of a geotechnical technician from Soil Engineers Ltd. All recovered soil samples were transported to our laboratory for further examination and classification. The bedrock encountered at the base of each test pit was confirmed through visual inspection and the mechanical refusal of the excavation equipment.

4.0 SUBSURFACE CONDITIONS

The subsurface conditions encountered at the test pit locations are characterized by a layer of surface organics and earth fill, underlain by native sandy silt and Precambrian granite bedrock. The following sections provide a detailed description of the various strata identified during the investigation. The logs of test pits are presented as Figures 1 to 7, inclusive, and the subsurface findings are illustrated based on the test pit locations as shown on Drawing No. 2.

4.1 Earth Fill

A layer of surface organics, ranging from 20 cm to 30 cm in thickness, was encountered at all test pit locations. Beneath the surficial organics, a deposit of clay fill was identified, extending to depths between 0.5 m and 1.0 m below the existing ground surface. This fill material was found to contain organic inclusions and varied in consistency across the site.

4.2 Sandy Silt

A native deposit of loose sandy silt was encountered beneath the fill layers in TP 2 to TP 7, inclusive. This material represents the primary overburden soil at the site, though its thickness is limited by the underlying bedrock profile.

4.3 Bedrock

Sound granite bedrock was encountered at the base of all test pits, with the depth to the bedrock surface ranging from 1.0 to 3.2 m below the prevailing grade. The bedrock was identified by the mechanical refusal of the excavation equipment and confirmed through visual inspection of the bedrock interface. The profile of the bedrock surface appears to be undulating.

5.0 GROUNDWATER CONDITION

Groundwater seepage was observed within the overburden soil at the bedrock interface in all test pits at the time of the field investigation. It is expected that any water seepage will run on the surface of the bedrock towards the lower elevation based on the bedrock topography. The quantity of water seepage appeared to be moderate and will be subject to seasonal fluctuations.

6.0 DISCUSSION AND RECOMMENDATIONS

The investigation has disclosed that beneath the topsoil and earth fill, the site is underlain by native sandy silt and Precambrian granite bedrock. The groundwater seepage is noted within the overburden along the interface of the bedrock.

It is understood that the site will be developed with a residential building with basement and a single storey podium. The geotechnical findings warranting special consideration for the proposed project are presented below:

1. All vegetation, topsoil and organic mixed soil must be stripped prior to site grading and construction. Any topsoil and organic mixed soil may be re-used for landscaping in designated areas only. Any surplus must be removed off site.
2. After demolition of the existing structures, the debris and any underground utilities, if any, must be removed and disposed off-site. The cavities should be backfilled with selected on-site inorganic soils, free of organics and deleterious material, and compacted to engineered fill specifications.
3. The existing earth fill is unsuitable for supporting any structures in its current state. For reuse as structural backfill, or in pavement and slab construction, the fill must be subexcavated, sorted free of concentrated topsoil, organics and other deleterious materials, and properly recompacted in layers. If it is impractical to sort the fill, it must be wasted and replaced with properly compacted inorganic earth fill.

4. Where site grading with additional fill is required. the additional earth fill can be constructed in an engineered manner for building support, pavement and underground services construction.
5. The proposed structure can be supported on conventional spread and strip footings founded on bedrock or engineered fill. The footing subgrade must be inspected by the geotechnical engineer or a senior geotechnical technician to ensure that the revealed conditions are compatible with the foundation design requirements.
6. A Class 'B' bedding, consisting of 19-mm Crusher-Run Limestone (CRL) or equivalent, can be used for underground service construction.

The recommendations appropriate for the project are presented herein. One must be aware that the subsurface conditions, particularly the depth and profile of the sound granite bedrock, may vary between test pit locations. Should such variations become apparent during construction, a geotechnical engineer must be consulted to determine whether the following recommendations require revision.

6.1 **Site Preparation**

Where additional fill is required for site grading, the earth fill can be constructed in accordance with the engineering fill specifications to support foundation, underground services, and pavement construction. The engineering requirements for a certifiable fill are presented below:

1. The topsoil, organic soils and vegetation must be removed. Badly weathered soil should also be removed, visually examined to be free of organics and aerated before reuse for structural backfill.
2. The debris from any demolished structures and abandoned underground utilities must be removed and disposed off-site. The cavities must be backfilled with selected on-site material, free of organics, compacted to engineered fill specifications.
3. The existing earth fill is not suitable for structural use and must be subexcavated and sorted free of organic and deleterious material before reusing for structural backfill. If the material cannot be sorted, it must be removed off site.
4. The exposed soil subgrade must be inspected and proof-rolled prior to any fill placement. Any loose material identified must be sub-excavated and backfilled with organic free material, compacted to engineered fill specifications.
5. Inorganic soils must be used for engineered fill construction, and they must be uniformly compacted in lifts of 20 cm thick to at least 98% Standard Proctor Maximum Dry Density (SPMDD) with its moisture content controlled near its optimum. If the house foundations are to be built soon after the fill placement, the densification process for the engineered fill must be increased to 100% SPMDD.

6. If imported fill is to be used, it should be inorganic soils, free of deleterious or any material with environmental issue or contamination. Any potential imported earth fill from off site must be reviewed for geotechnical and environmental quality by the appropriate personnel as authorized by the developer or agency, before being hauled to the site.
7. If the engineered fill is compacted with the moisture content on the wet side of the optimum, the underground services and pavement construction should not begin until the pore pressure within the fill mantle has completely dissipated. This must be further assessed at the time of the engineered fill construction.
8. The engineered fill must not be placed during the period where freezing ambient temperatures occur either persistently or intermittently. This is to ensure that the fill is free of frozen soils, ice and snow. If the fill is to be left over the winter months, adequate earth cover, or equivalent, must be provided for protection against frost action.
9. The fill operation must be supervised and monitored on a full-time basis by a geotechnical technician under the direction of a geotechnical engineer.
10. The engineered fill envelope and finished elevations must be clearly and accurately defined in the field, and they must be precisely documented by a surveyor.
11. Any excavation carried out in certified engineered fill must be reported to the geotechnical consultant who supervised the fill placement in order to document the locations of excavation and/or to supervise reinstatement of the excavated areas to engineered fill status. If construction on the engineered fill does not commence within a period of 2 years from the date of certification, the condition of the engineered fill must be assessed for re-certification.
12. Despite stringent control in the placement of the engineered fill, variations in soil type and density may occur in the engineered fill. Therefore, the foundations must be properly reinforced and designed by the structural engineer. The total and differential settlements of 25 mm and 20 mm, respectively, should be considered in the design of the foundation founded on engineered fill.
13. The footing, slab-on-grade and underground services subgrade must be inspected by the geotechnical consulting firm which supervised the engineered fill placement. This is to ensure that the foundations and service pipes are placed within the engineered fill envelope, and the integrity of the fill has not been compromised by interim construction, environmental degradation and/or disturbance by any excavation.

6.2 **Foundation**

It is understood that the proposed residential building is intended to be supported on conventional spread and strip footings founded on either sound granite bedrock or engineered fill. The recommended bearing pressures for the design of conventional footings are provided below:

Foundations on Sound Granite Bedrock:

- Factored Ultimate Bearing Pressure at Ultimate Limit State (ULS) = 2000 kPa.

Foundations on Engineered Fill:

- Maximum Soil Bearing Pressure at Serviceability Limit State (SLS) = 150 kPa.
- Factored Soil Bearing Pressure at Ultimate Limit State (ULS) = 300 kPa.

The total and differential settlements for foundations founded onto the engineered fill designed with bearing pressure at SLS are anticipated to be within 25 mm and 20 mm, respectively. Where the foundations are founded onto the bedrock, the total and differential settlements of the structure are negligible as the bedrock is considered an unyielding material where the bearing pressure at ULS will govern the foundation design.

It is recommended that the foundation be constructed on a single soil or bedrock subgrade to avoid differential settlement and proper foundation design. Where stepped down footings are required, it should be stepped at a gradient of 2H:1V. Where the individual footings are to be constructed in close proximity to each other, the lower footing must be constructed prior to the footing at higher elevation and that they must maintain at a gradient of 10H:7V from each other.

The foundation subgrade must be inspected by either a geotechnical engineer or a senior geotechnical technician under the supervision of a geotechnical engineer to ensure that the revealed conditions are compatible with the foundation design requirements.

For foundations seated directly on sound, non-frost susceptible granite bedrock, there is no minimum burial depth requirement for frost protection. However, any foundations founded on engineered fill, or those exposed to freezing temperatures in unheated areas, must be provided with a minimum of 1.6 m of earth cover for frost protection.

The foundations should meet all requirements specified in the latest Ontario Building Code. For seismic consideration, the structure should be designed to resist an earthquake force using Site Classification 'C'. Alternatively, a Multi-Channel Analysis of Surface Waves (MASW) test can be considered to further evaluate its site classification as well as to determine the average shearwave velocity (Vs_{30}) of the subject site. If Vs_{30} is higher than 760 m/s and that there is less than 3.0 m of soil separation between the underside of footing and the bedrock, the Site Classification 'B' may be used.

For foundation wall backfill, free-draining non-frost susceptible soil should be used. Where in-situ inorganic soil is used for foundation wall backfill, a polyethylene slip membrane should be implemented, extending to the depth of frost penetration, to prevent any potential damage due to frost action. The foundation wall backfill must be compacted to at least 95% SPMDD in lifts no more than 20 cm in thickness.

6.3 Underground Structure

The perimeter walls of the below ground portion of the basement structure must be designed to sustain lateral earth pressure. Any applicable surcharge loads adjacent to the underground structure, such as those from traffic or building loads, hydrostatic pressure, if any, must also be considered in the design of the foundation walls.

The foundation walls must be damp-proofed and provided with a perimeter subdrain system at the wall base. The basement floor subgrade should consist of sound granite bedrock or engineered fill compacted to 100% SPMDD. The floor slab should be constructed on a 20 cm thick granular base consisting of 19-mm CRL, or an approved equivalent, compacted to 100% SPMDD.

The ground surface must be graded to direct water away from the structures to prevent ponding of water adjacent to the foundation walls. Appropriate measures for surface water management should be maintained throughout the life of the structure to ensure the integrity of the foundation system.

6.4 Underground Services

The subgrade for underground services should consist of sound granite bedrock or properly compacted engineered fill. Where loose native sandy silt or existing earth fill is encountered at the service subgrade, it must be subexcavated and replaced with bedding material compacted to at least 98% SPMDD. A Class 'B' bedding, consisting of compacted 19-mm CRL or equivalent, is recommended for the construction of the underground services.

The sewer joints must be leak-proof or wrapped with an appropriate waterproof membrane to prevent subgrade migration. Similarly, pipe joints connecting into manholes and catch basins must be leak-proof to prevent the migration of fines through the joints. Openings to subdrains and catch basins should be shielded with a fabric filter to prevent blockage by silting.

A soil cover equal to the pipe diameter should be in place at all times after pipe installation to prevent pipe flotation in the event the trench is deluged with water from precipitation or seasonal snowmelt.

6.5 Backfilling in Trenches and Excavated Areas

The native inorganic soil is generally suitable for reuse as structural backfill. Backfill in service trenches or beside foundation walls should be compacted to at least 95% SPMDD in lifts not exceeding 20 cm in thickness. The lift thickness should be further verified by test strips performed with the specific compaction equipment used on-site. Given the Precambrian environment of the site, any boulders or rock fragments larger than 15 cm in size are not suitable for use in structural backfill and must be removed.

In area within the zone 1.0 m below the pavement subgrade, the material must be compacted to at least 98% SPMDD to ensure long-term stability. The moisture content should be maintained at 2% to 3% drier than the optimum to provide necessary stiffness for pavement support.

In standard construction practice, ground settlement often occurs adjacent to manholes, catch basins, service crossings, and foundation walls. As such, in areas that are inaccessible to heavy compaction equipment, a sand backfill should be used, as it can be effectively compacted using smaller or light-duty vibratory equipment.

6.6 Pavement Design

The recommended pavement structure for on grade access roadways and parking is presented in Table 1.

Table 1 - Pavement Design

Course	Thickness (mm)	OPS Specifications
Asphalt Surface	40	HL3
Asphalt Binder Light-Duty Parking Heavy Duty/Fire Route	 40 50	HL8
Granular Base	150	Granular 'A' or equivalent
Granular Sub-base Light-Duty Parking Heavy Duty/Fire Route	 250 350	Granular 'B' or equivalent

In preparation of the pavement subgrade, the final surface must be proof-rolled and inspected. Any soft spots identified, such as areas of loose native sandy silt or old fill, must be rectified by subexcavation and replacement with selected inorganic material, uniformly compacted to at least 100% SPMDD. The granular bases must also be compacted to 100% SPMDD.

For the paved parking area, an intercept subdrain system should be installed along the perimeter and at lower elevations where surface runoff may collect. This is necessary to prevent infiltrating precipitation from seeping into the granular bases, which could lead to frost damage. Catch basins with stub drains in all four directions should be provided, connecting through filter-sleeved weepers.

6.7 Soil Parameters

The recommended soil parameters for the project design are given in Table 2.

Table 2 - Soil Parameters

Unit Weight and Bulk Factor	**Bulk Unit Weight (kN/m^3)**	**Estimated Bulk Factor**	
		Loose	**Compacted**
Existing Earth Fill	20.0	1.20	0.98
Sandy Silt	21.0	1.25	1.00
Granite Bedrock	26.0	1.50	-
Lateral Earth Pressure Coefficients	**Active K_a**	**At Rest K_0**	**Passive K_p**
Existing Earth Fill	0.39	0.56	2.56
Sandy Silt	0.33	0.50	3.00
Granite Bedrock	0.17	0.29	5.88

Table 2 - Soil Parameters (Cont'd)

Estimated Coefficient of Permeability (K) and Percolation Time (T)	**K (cm/sec)**	**T (min/cm)**
Sandy Silt	10^{-5}	20
Estimated Electrical Resistivity		
Sandy Silt	4500 ohm·cm	
Coefficients of Friction		
Between Concrete and Granular Base	0.50	
Between Concrete and Sound Granite Bedrock	0.60	
Between Concrete and Sound Native Soils	0.35	

6.8 Excavation

Excavation must be carried out in accordance with Ontario Regulation 213/91. For excavation purposes, the types of soils encountered at the site are classified in Table 3.

Table 3 - Classification of Soils for Excavation

Material	**Type**
Bedrock	1
Existing Earth Fill, Sandy Silt	3

It should be noted that the water seepage from the excavation may be affected by seasonal fluctuations due recent precipitation events and/or the local snowmelt. During periods of heavy rain or spring thaw, the volume of seepage at the soil-bedrock interface may increase. While the observed groundwater is not expected to pose a significant challenge to the proposed construction.

During excavation, it is anticipated that any water seepage can be removed by conventional pumping from sumps.

Excavation into the sound granite bedrock, which was encountered at depths as shallow as 1.0 m, will likely require the use of heavy-duty pneumatic rock hammers or rock blasting. If blasting is used, an expert must be consulted to determine the blasting sequences and intensity to prevent damage to the existing surrounding residential buildings and buried utilities.

Since there are existing structures near the proposed development, a pre-construction survey must be completed. The potential impact from shock waves must be assessed by the blasting contractor to provide baseline data for assessing any future claims for damages. This survey should include photographs, videos, and visual inspections of neighboring properties.

Vibration monitoring must be carried out during all blasting operations to aid in setting charges and to confirm that vibrations remain within allowable tolerances. The results of the vibration monitoring, combined with the pre-construction survey, will serve to protect the project from potential damage claims.

7.0 LIMITATIONS OF REPORT

This report was prepared by Soil Engineers Ltd. for the account of the Ted Smith Construction of Bala Ltd, and for review by their designated consultants, contractors, financial institutions, and government agencies. The material in the report reflects the judgment of Tat Chun Man, B.Eng., EIT and Kin Fung Li, P.Eng. in light of the information available to it at the time of preparation.

Use of the report is subject to the conditions and limitations of the contractual agreement. Any use which a Third Party makes of this report, and/or any reliance on decisions to be made based on it is the responsibility of such Third Parties. Soil Engineers Ltd. accepts no responsibility for damages, if any, suffered by any Third Party as a result of decisions made or actions based on this report.

SOIL ENGINEERS LTD.

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LICENSED PROFESSIONAL ENGINEER
March 26, 2024
K. F. LI
100169280
PROVINCE OF ONTARIO

JOB NO.: 2602-S029

LOG OF TEST PIT 1

FIGURE NO.: 1

PROJECT DESCRIPTION: Proposed Residential Building

METHOD: Backhoe

PROJECT LOCATION: 1011 Maple Avenue, Township of Muskoka Lakes (Bala)

EXCAVATION DATE: Sept. 25, 2025

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES: Number	SAMPLES: Type	SAMPLES: N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
226.8	Ground Surface							
0.0	20 cm ORGANICS				0			
226.6 / 0.2	EARTH FILL silty clay with organics							
225.8 / 1.0	END OF TEST PIT REFUSAL AT BEDROCK				1			▽ Water seepage @ bedrock surface
					2			
					3			

Soil Engineers Ltd.

JOB NO.: 2602-S029

LOG OF TEST PIT 2

FIGURE NO.: 2

PROJECT DESCRIPTION: Proposed Residential Building

METHOD: Backhoe

PROJECT LOCATION: 1011 Maple Avenue, Township of Muskoka Lakes (Bala)

EXCAVATION DATE: Sept. 25, 2025

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES: Number	SAMPLES: Type	SAMPLES: N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
226.9	Ground Surface							
0.0	30 cm ORGANICS				0			
226.6								
0.3	EARTH FILL silty clay with organics							
226.1								
0.8	Loose SANDY SILT				1			
224.8					2			Water seepage @ bedrock surface
2.1	END OF TEST PIT REFUSAL AT BEDROCK				3			

Soil Engineers Ltd.

JOB NO.: 2602-S029

LOG OF TEST PIT 3

FIGURE NO.: 3

PROJECT DESCRIPTION: Proposed Residential Building

METHOD: Backhoe

PROJECT LOCATION: 1011 Maple Avenue, Township of Muskoka Lakes (Bala)

EXCAVATION DATE: Sept. 25, 2025

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES: Number	SAMPLES: Type	SAMPLES: N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
227.3	Ground Surface							
0.0	30 cm ORGANICS				0			
227.0								
0.3	EARTH FILL							
	silty clay with organics							
226.7								
0.6	Loose							
	SANDY SILT				1			
					2			
					3			
224.1								
3.2	END OF TEST PIT REFUSAL AT BEDROCK							

▽ Water seepage @ bedrock surface

Soil Engineers Ltd.

JOB NO.: 2602-S029

LOG OF TEST PIT 4

FIGURE NO.: 4

PROJECT DESCRIPTION: Proposed Residential Building

METHOD: Backhoe

PROJECT LOCATION: 1011 Maple Avenue, Township of Muskoka Lakes (Bala)

EXCAVATION DATE: Sept. 25, 2025

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES: Number	SAMPLES: Type	SAMPLES: N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
226.9 0.0	Ground Surface 20 cm ORGANICS				0			
226.7 0.2	EARTH FILL silty clay with organics							
225.9 1.0	Loose SANDY SILT				1			
225.1 1.8	END OF TEST PIT REFUSAL AT BEDROCK				2 3			Water seepage @ bedrock surface

Soil Engineers Ltd.

JOB NO.: 2602-S029

LOG OF TEST PIT 5

FIGURE NO.: 5

PROJECT DESCRIPTION: Proposed Residential Building

METHOD: Backhoe

PROJECT LOCATION: 1011 Maple Avenue, Township of Muskoka Lakes (Bala)

EXCAVATION DATE: Sept. 25, 2025

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES: Number	SAMPLES: Type	SAMPLES: N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
227.1	Ground Surface							
0.0	20 cm ORGANICS				0			
226.9 / 0.2	EARTH FILL silty clay with organics							
226.3 / 0.8	Loose SANDY SILT				1			▽ Water seepage @ bedrock surface
225.6 / 1.5	END OF TEST PIT REFUSAL AT BEDROCK				2			
					3			

Soil Engineers Ltd.

JOB NO.: 2602-S029

LOG OF TEST PIT 6

FIGURE NO.: 6

PROJECT DESCRIPTION: Proposed Residential Building

METHOD: Backhoe

PROJECT LOCATION: 1011 Maple Avenue, Township of Muskoka Lakes (Bala)

EXCAVATION DATE: Sept. 25, 2025

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES: Number	SAMPLES: Type	SAMPLES: N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
226.7	Ground Surface							
0.0 226.5	20 cm ORGANICS				0			
0.2 226.2	EARTH FILL silty clay with organics							
0.5 225.3	Loose SANDY SILT				1			Water seepage @ bedrock surface
1.4	END OF TEST PIT REFUSAL AT BEDROCK				2 3			

Soil Engineers Ltd.

JOB NO.: 2602-S029

LOG OF TEST PIT 7

FIGURE NO.: 7

PROJECT DESCRIPTION: Proposed Residential Building

METHOD: Backhoe

PROJECT LOCATION: 1011 Maple Avenue, Township of Muskoka Lakes (Bala)

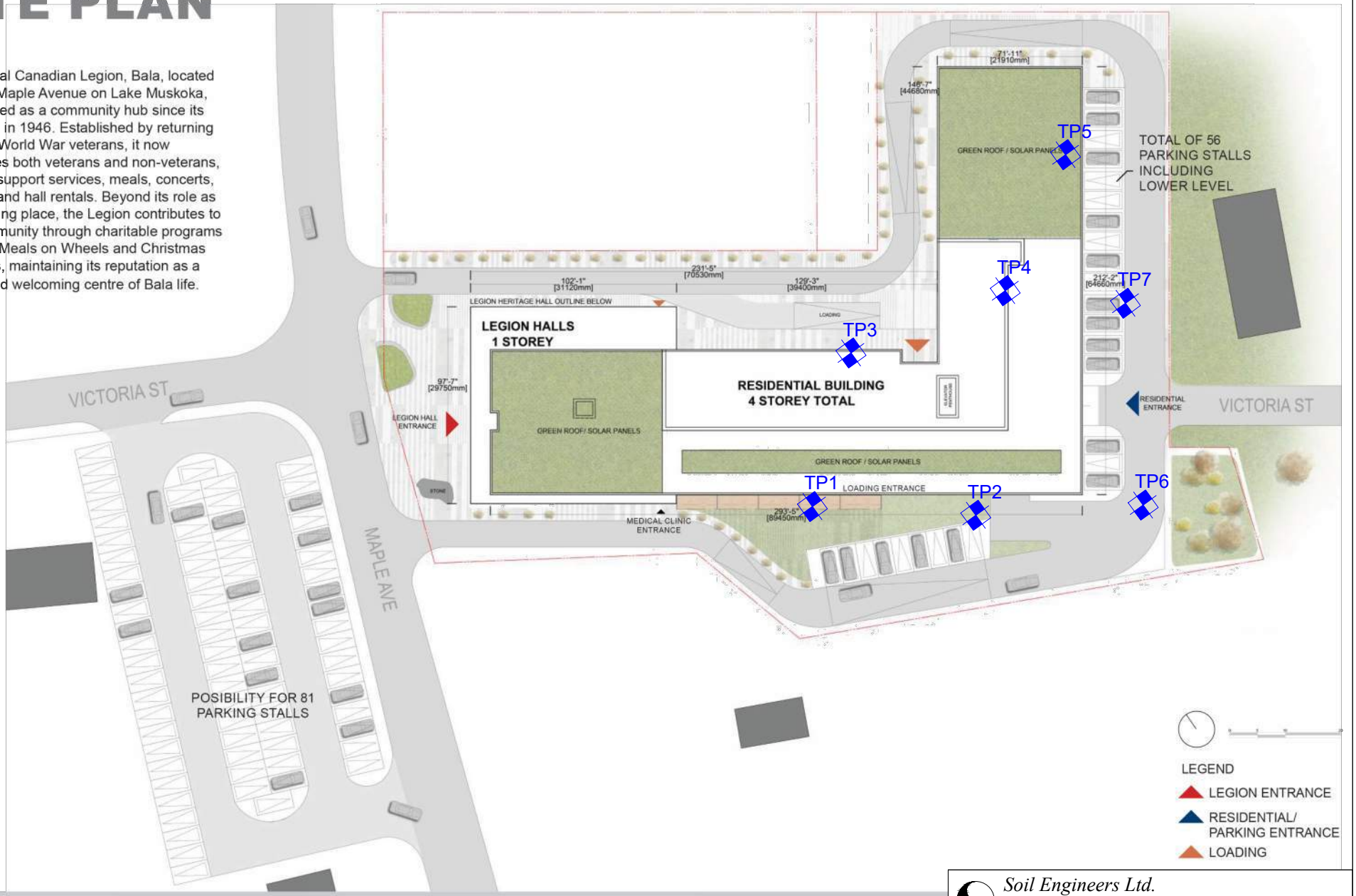
EXCAVATION DATE: Sept. 25, 2025

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES: Number	SAMPLES: Type	SAMPLES: N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
226.9	Ground Surface							
0.0	20 cm ORGANICS				0			
226.7 / 0.2	EARTH FILL silty clay with organics							
225.9 / 1.0	Loose SANDY SILT				1			Water seepage @ bedrock surface
225.4 / 1.5	END OF TEST PIT REFUSAL AT BEDROCK				2 3			

Soil Engineers Ltd.

SITE PLAN

The Royal Canadian Legion, Bala, located at 1011 Maple Avenue on Lake Muskoka, has served as a community hub since its founding in 1946. Established by returning Second World War veterans, it now welcomes both veterans and non-veterans, offering support services, meals, concerts, games, and hall rentals. Beyond its role as a gathering place, the Legion contributes to the community through charitable programs such as Meals on Wheels and Christmas hampers, maintaining its reputation as a warm and welcoming centre of Bala life.



Soil Engineers Ltd.
CONSULTING ENGINEERS
GEOTECHNICAL | ENVIRONMENTAL | HYDROGEOLOGICAL | BUILDING SCIENCE
90 WEST BEAVER CREEK ROAD, SUITE #100, RICHMOND HILL, ONTARIO L4B 1E7 · TEL: (416) 754-8515 · FAX: (905) 881-8335

Test Pit Location Plan

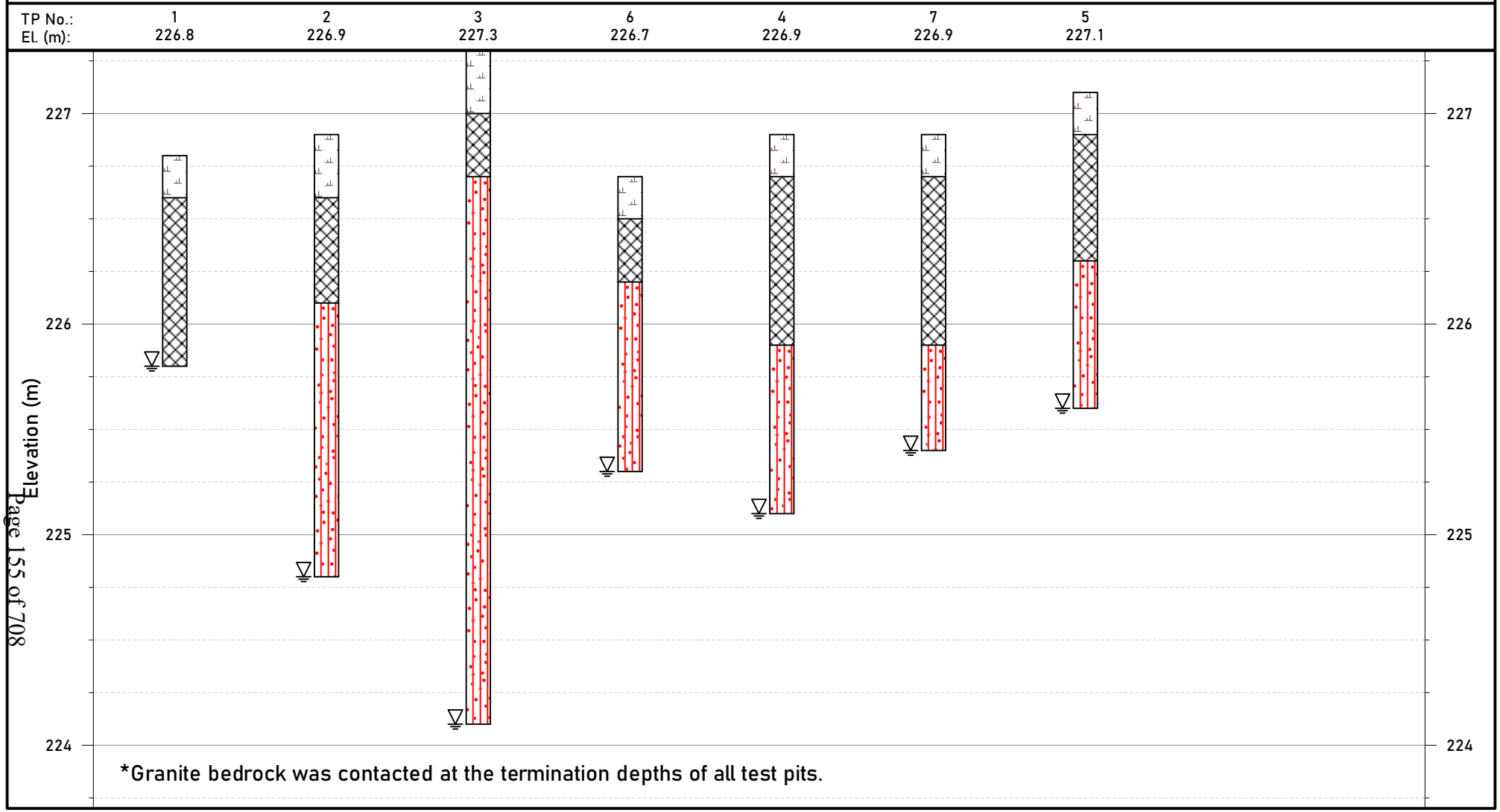
SITE: 1011 Maple Avenue, Township of Muskoka Lakes (Bala)			
DESIGNED BY: P.K.	**CHECKED BY:** K.L.	**DWG NO.:** 1	
SCALE: 1:800	**REF. NO.:** 2602-S029	**DATE:** March 2026	**REV** -

Soil Engineers Ltd.
CONSULTING ENGINEERS
GEOTECHNICAL | ENVIRONMENTAL | HYDROGEOLOGICAL | BUILDING SCIENCE

SUBSURFACE PROFILE
DRAWING NO. 2
SCALE: AS SHOWN

JOB NO.: 2602-S029
REPORT DATE: March 2026
PROJECT DESCRIPTION: Proposed Residential Building
PROJECT LOCATION: 1011 Maple Avenue, Township of Muskoka Lakes (Bala)

LEGEND
FILL ORGANIC SANDY SILT
WATER LEVEL (END OF EXCAVATION)



*Granite bedrock was contacted at the termination depths of all test pits.

Design Chart 1.08: Hydrologic Soil Groups (Continued)

- Based on Soil Texture

Sands, Sandy Loams and Gravels	
- overlying sand, gravel or limestone bedrock, very well drained	A
- ditto, imperfectly drained	AB
- shallow, overlying Precambrian bedrock or clay subsoil	B
Medium to Coarse Loams	
- overlying sand, gravel or limestone, well drained	AB
- shallow, overlying Precambrian bedrock or clay subsoil	B
Medium Textured Loams	
- shallow, overlying limestone bedrock	B
- overlying medium textured subsoil	BC
Silt Loams, Some Loams	
- with good internal drainage	BC
- with slow internal drainage and good external drainage	C
Clays, Clay Loams, Silty Clay Loams	
- with good internal drainage	C
- with imperfect or poor external drainage	C
- with slow internal drainage and good external drainage	D

Source: U.S. Department of Agriculture (1972)

APPENDIX C

Sanitary and Water Servicing Information

Industrial and Commercial Water Services

All connections are to be located in accordance with DMM 202.

Planting Blocks

Water services to buffer blocks, parkettes and median plantings shall be no larger than 25mm diameter and will only be permitted for Area Municipalities. Meters and backflow preventers are required

Jurisdiction and maintenance agreements, including cost recoveries need to be clearly established when incorporating irrigation systems.

Water Meters

Water meters shall be supplied to the property owner by the District upon receipt of the completed connection permit application and appropriate fee.

3.6 Sanitary Sewer Systems

3.6.1 Sewer Use By-Law

Applicants will be required to abide by the District's Sewer Use By-law which regulates and controls the discharge of waste into the District's sewer systems. Non-domestic and hauled waste water dischargers shall contact the District to confirm whether a Waste Discharge Permit is required in accordance with the by-law, prior to discharging waste into the sanitary sewer system.

3.6.2 Design Flows

Design flows shall be in accordance with the Ministry's current version of the Design Guidelines for Sewage Works and the following;

Average Daily Flows

The average daily flow for infrastructure design purposes shall be calculated in accordance with the following table, which is considered to include a margin of safety. Actual usage data may be used for particular industrial uses when available and verifiable.

It is also noted the District has a Water and Sewer Capacity Allocation Strategy for each Area Municipality based upon actual local demand data. This data is to be used by Design Consultants only for the calculation of Equivalent Residential Units (ERU's) when assigning available infrastructure capacity during the development agreement stage. Data in the Water and Sewer Capacity Allocation Strategy is updated annually and shall be obtained from the District by the Design Consultant.

Average Daily Sanitary Sewage Flows

Development Type	Unit	Avg. Flow Rate	Peaking Factor
Residential	L/cap/day	450	As per Ministry Design Guidelines
Commercial and Institutional	As per Ministry Design Guidelines		
Heavy Industrial	m^3/ha/day	55	As per Ministry Design Guidelines
Light Industrial	m^3/ha/day	35	As per Ministry Design Guidelines

Population Equivalents Based on Land Use

Land use and population equivalents for infrastructure design shall be based on the District or Area Municipality's Official Plan and/or Zoning By-Law applicable to the area.

Residential

Population equivalent densities are to be calculated based on the Official Plan and/or the criteria in the following table:

Residential Population Densities

Density	Unit
Single Family	3.5 persons/lot or 15 persons/hectare
Semi-detached	3.5 persons/lot or 20 persons/hectare
Row dwellings	3.5 persons/lot or 40 persons/hectare
Apartments	240 persons/hectare

Extraneous Flows

Except for unusual circumstances, the infiltration portion of sewage flow for infrastructure design purposes shall be 0.28 L/sec/ha for all types of land use. This factor applies to the gross area of all lands.

Before Initial Acceptance and/or Assumption of new sewer installations, the source of any detected infiltration shall be found and rectified as a construction quality control matter such that infiltration is effectively zero.

Peak Domestic Sewage Flow Calculation

Q = IA + (PqM/86.4), where
I = peak extraneous flow (0.28 L/ha/s) A = tributary area
P = population, in thousands
Q = average daily per capita domestic flow in L/cap/day
M = peaking factor (Harmon or Babbitt, min 2.0)

Harmon M = 1+ 14/(4+p0.5)
Babbitt M = (5/p0.2)

3.6.3 Gravity Sanitary Sewer Pipe Selection and Design

Minimum Sewer Size and Slopes

Minimum gravity sewer pipe size permitted is 150 mm dia. Minimum slopes shall be 0.5% except for the furthest upstream leg of sewer on any tributary of a system where a minimum grade of 1.00% is required if self-cleansing velocities cannot be achieved under pipe flowing full criteria. Any sewers proposed to be installed at a pipe slope less than 0.5% must be approved by the District prior to the final submission.

Pipe Size

Sewers shall be designed to ensure a flowing full velocity of between 0.6 m/s and 3.0 m/s using the Manning formula, and to flow at a maximum of 80 percent full flow design capacity of the pipe size. The Manning roughness coefficient shall be 0.013. Sanitary sewer design sheets shall indicate both actual and flowing full velocities.

Sewer Pipes and Appurtenances

Sewer pipes and appurtenances shall be in accordance with the current Approved Products List in Appendix C. All sewers with gradients of 4:1 or greater shall be anchored.

High Density	Apartment dwellings	54 - 300 units/hectare @ 1.67ppu

- Typical zoning designations for High Density Development may include RA1 and RA2. It should be noted that zoning designations are subject to change, and it is the responsibility of the designer to ensure that the most current zoning by-laws and designations are being used.

The method of determining design population for residential flows will depend upon the particular stage that is being considered and the appropriate detail required for the desired level of design accuracy. Reference shall be made to current zoning policies.

Development Details Basis

When the details regarding the proposed uses on individual lots are known, or can be assumed with reasonable certainty, a more detailed approach to design population and associated design flow estimation is required. This approach involves the determination of individual design flows for the various areas in the tributary area which will contribute to an individual sewer reach. The actual number of units shall be used and the design population estimated using the following people per unit (ppu) values.

Low Density	3.13 ppu
Medium Density	2.34 ppu
High Density	1.67 ppu

3.3.1.2. Average Daily Flow (REVISED)

Average daily domestic flow = 300 L/day/person

3.3.1.3. Peak Flow

Peak domestic flow is to be calculated using the following formula:

$$Qp = \frac{P \times q \times M}{86.4} + I \times A$$

Where Qp = Peak residential sanitary sewage flow, including peak extraneous flows (L/s)

P = Design population in thousands (see Section 3.3.1.1)

q = Average daily domestic flow per capita (L/day/person) (see Section 3.3.1.2)

M = Peaking factor (see Section 3.3.1.3)

I = Peak extraneous flow (L/s/ha) (see Section 3.3.4)

A = Tributary area (ha) (see Section 3.2.2)

As per the MECP Design Guidelines for Sewage Works, as amended, the peaking factor, M, can be calculated using the Harmon Formula or Babbit Formula. The Babbit Formula gives peaking factors that are more representative of instantaneous peaks, and the Harmon Formula gives peaking factors that are more representative of peak hour. The Babbit Formula shall only be used to assess the upstream reaches of the sewer shed where depth of flow and minimum scour is a concern for partial flow conditions where depth of flow is less than 30% of the pipe diameter.

Harmon Formula

BALA LEGION RE-DEVELOPMENT

Township of Muskoka Lakes

Project Number: 26-11893M
Date: April 22, 2026
Design By: DH
Checked By: DH
File:

SANITARY SEWER DESIGN SHEET

ENGINEERING AND PUBLIC WORKS

Drainage Area Plan No:

Design Parameters

Average Daily Flow:
Residential 0.0052 L/cap/sec (450 L/cap/day)
Residential Population Density*:

1 Bedroom 1.8 pp/unit
2 Bedroom 3 pp/unit

Mannings "*n*" 0.0130
Min. Velocity 0.60 m/sec
Max. Velocity 3.0 m/sec

Residential Harmon Peaking Factor (F)
ICI Development Peaking Factor of 2

Residential Areas Infiltration 0.28 L/s/ha

PINESTONE ENGINEERING LTD.

LOCATION				RESIDENTIAL AREAS and POPULATION						SCHOOL, INSTITUTIONAL			COMMERCIAL			INDUSTRIAL			TOTAL ICI FLOW	INFILTRATION			DESIGN								CHECKS		
										HECTARES AND FLOW OF EACH ZONING																						
										0.32 *L/s/ha*			0.32 *L/s/ha*			0.40 *L/s/ha*																
STREET	AREA NO.	MANHOLE LOCATION		AREA	2 BEDROOM APARTMENT	1 BEDROOM APARTMENTS	POPUL.	CUMUL POPUL.	HARMON PEAK FACTOR	PEAK RES. FLOW	AREA	CUMUL AREA	PEAK FLOW	AREA	CUMUL AREA	PEAK FLOW	AREA	CUMUL AREA	PEAK FLOW		AREA	CUMUL AREA	INFIL FLOW	TOTAL VOLUME FLOW	LENGTH	SLOPE	PIPE SIZE	CAPACITY	FULL FLOW VELOCITY	ACTUAL VELOCITY	d/D	Velocity > 0.6 m/s	% Pipe Full
		FROM MH	TO MH																												
				ha			*1000s*	*1000s*		*L/sec*	*ha*	*ha*	*L/sec*	*ha*	*ha*	*L/sec*	*ha*	*ha*	*L/sec*	*L/sec*	*ha*	*ha*	*L/sec*	*L/sec*	*m*	*%*	*mm*	*L/sec.*	*m/s*	*m/s*			*%*
MAPLE AVENUE		2A	1A	0.773	61.00	67.00	0.304	0.304	4.08	6.45				0.091	0.091	0.058				0.058	0.864	0.864	0.24	6.75	85.00	0.50	200.00	23.18	0.74	0.64	0.37	Ok	29%
		1A	EX 38A					0.304	4.08	6.45				0.000	0.091	0.058				0.058	0.000	0.864	0.24	6.75	5.50	1.00	200.00	32.78	1.04	0.82	0.31	Ok	21%
																					TOTAL PEAK FLOWRATE			**6.75**									

* Residential Population Densities Derived from the City of Barrie's Sanitary Infrastructure Design Standard (2025)

3.5.2 Watermain

Pipe Sizing

All watermain sizing and pressure requirements shall be in accordance with the Ministry's current Design Guidelines for Drinking Water Systems and shall be confirmed through the District's water system model.

Applicants are required to provide their proposed water system data to the District for entering into the District's water system model. This modeling exercise will be performed by the District at the cost of the Applicant. The results of the modeling exercise are to be incorporated into the water system design for the development.

The minimum pipe size for a watermain is 150 mm diameter unless approved in advance by the District and except for 50 mm diameter looped systems in residential cul-de-sacs in accordance with District Standard Drawings.

Fire Approval

Fire protection approval is required for all industrial, commercial, institutional and high-density residential servicing applications where municipal water is available. Local municipalities must review site plans in accordance with the Ontario Building Code for fire protection purposes.

Where watermains are to be used for fire protection purposes on private property they must satisfy the requirements of the Fire Underwriters Survey in addition to the requirements of the local building department.

Water Demands

Water demands for infrastructure design purposes are to be calculated using the criteria in the Table below, which is considered to include a margin of safety to address unknowns and infrastructure as it ages.

It is also noted the District has a Water and Sewer Capacity Allocation Strategy as per By-Law 2023-48 as amended for each area municipality based upon actual local demand data. This data is to be used by Design Consultants only for the calculation of Equivalent Residential Units (ERU's) when assigning available infrastructure capacity during the development agreement stage. Data in the Water and Sewer Capacity Allocation Strategy is updated annually and shall be obtained from the District by the Design Consultant.

Typical Water Demand Criteria

Development Type	Unit	Avg. Consumption Rate	Max Day Factor	Peak Hour Factor
Residential	L/Cap/day	450	As Per Ministry Guidelines	
Commercial and Institutional	As Per Ministry Guidelines			
Industrial	As Per Ministry Guidelines			

Building Type	Population Density (PPU)	Equivalent Residential Unit (ERU)
Single Family Home	3.5	1
Townhouse	3.0	0.85
Apartment	2.5	0.7

Custom demands for larger volume consumers or those with exceptional peak demands require special considerations regarding flow calculations. Each case will be reviewed on an individual basis.

Undeveloped Areas

When sizing watermains to service currently undeveloped areas the population or development type used to calculate demand shall be based on the Official Plan and Zoning By-Laws for the area being considered. It is the Design Consultant's responsibility to obtain and consider the Official Plans and Zoning By-Laws of the municipality having jurisdiction over the area being serviced. In case of a conflict between the Area Municipality's and District's Official Plans and By-Laws, the Official Plan and By-Law which produces the higher demand shall be used.

Minimum Water Pressure Criteria

Watermain supply systems are to be designed to achieve the following minimum pressures under the noted demand scenario:

Demand Scenario	Minimum Acceptable Pressure Range (PSI)	
	Preferred	Accepted
Maximum Day Demand	50-70	40-100
Maximum Day + Fire	>20	>20
Peak Hour Demand	50-70	40-100
Average Day Demand	50-70	40-100
Min Hour Demand	50-70	40-100

Watermain Locations

In general, watermains shall be located out of the paved roadway and in the boulevard area behind curb (or ditch invert) in accordance with the District and Area Municipality's standard location drawings and must have a minimum horizontal separation of 2.5 m (edge to edge) from sewers or manholes. Under unusual conditions such as prevailing bedrock, severe dewatering conditions, or congested areas, the District will consider closer spacing and alternate locations which comply with Ministry separation criteria and procedures, e.g. Procedure F-6-1.

For partial watermain replacements, extensions or full reconstruction, the Design Consultant shall contact the District and the Area Municipality to establish the feasibility of locating the watermain within the boulevard. All non-standard watermain locations will require individual approval by the District and Area Municipality.

Joint deflection is not permitted. All changes in horizontal or vertical alignment shall be accomplished using manufactured bends.

Watermain Depth

Watermain shall be constructed with a minimum cover of 1.8 m to finished grade. Where cover requirements cannot be satisfied, insulation requirements shall be in accordance with the pertinent OPSD as appropriate. Approval of the reduced cover must be obtained from the

4.2.2 Private Wells

Private wells will not be permitted unless approval is granted from the City. The review and approval of new wells may be considered by the City only in cases where replacement or upgrading of existing systems is warranted. The proposed development must be serviced from the municipal water distribution system, ensuring any connections to the previous private well supply have a complete physical disconnection from any piping or plumbing that is to be connected to the municipal water supply.

4.2.3 Infrastructure Standard Drawings

In addition to these written guidelines, reference should also be made to the City's Infrastructure Standard Drawings.

4.2.4 Verified Technologies for Drinking Water Systems

In addition to these written guidelines, reference should also be made to the Verified Technologies for drinking water systems list.

4.3 Watermain Design Criteria

4.3.1 Flow Calculations

The Developer/Owner and his Consultant shall propose the size of the watermain to accommodate the development.

The watermain shall be sized to meet the greater of either:

- Maximum day demand plus fire flow or
- Peak hour demand.

DENSITIES – the following densities shall be used for population:

Residential P.P.U.

Low Density (single detached, duplexes or semi-detached dwellings)	3.25 ppu
Medium Density (triplexes and fourplexes, cluster and/or block townhouses, street townhouses, walk-up apartments)	2.57 ppu
High Density (apartment dwellings)	1.67 ppu

Adopted from "Development Charges Background Study City of Barrie", Watson & Associates, April 2019

AVERAGE DAY DEMANDS – the following minimum average consumption rates shall be used in average demand calculation:

Average Water Consumption Rate

Residential	225 Litres/Capita/Day
Commercial/Institutional	28 m^3/ha/Day

Table 3-1: Peaking Factors

POPULATION	MINIMUM RATE FACTOR (MINIMUM HOUR)	MAXIMUM DAY FACTOR	PEAK RATE FACTOR (PEAK HOUR)
500 - 1 000	0.40	2.75	4.13
1 001 - 2 000	0.45	2.50	3.75
2 001 - 3 000	0.45	2.25	3.38
3 001 - 10 000	0.50	2.00	3.00
10 001 - 25 000	0.60	1.90	2.85
25 001 - 50 000	0.65	1.80	2.70
50 001 - 75 000	0.65	1.75	2.62
75 001 -150 000	0.70	1.65	2.48
greater than 150 000	0.80	1.50	2.25

3.4.3 Commercial and Institutional Water Demands

Institutional and commercial flows should be determined by using historical records, where available. Where no records are available, the values in Table 3.2 should be used. For other commercial and tourist-commercial areas, an allowance of 28 m^3/(ha·d) [3000 USgal/(acre·d)] average flow should be used in the absence of reliable flow data.

When using the above unit demands, maximum day and peak rate factors should be developed. For establishments in operation for only a portion of the day such as schools and shopping plazas, the water usage should also be factored accordingly. For instance, with schools operating for 8 hours per day, the water use rate would be at an average rate of 70 L/(student·day) [19 USgal/(student·day)] x 24/8 or 210 L/student (55 USgal/student) over the 8-hour period of operation. The water use will drop to a residual amount during the remainder of the day. Schools generally do not exhibit large maximum day to average day ratios and a factor of 1.5 will generally cover this variation. For estimation of ***peak demand*** rates, an assessment of the water-using fixtures is generally necessary and a fixture-unit approach should be used.

BALA LEGION RE-DEVELOPMENT
FIRE UNDERWRITER'S SURVEY (FUS) REQUIRED FIRE FLOW CALCULATION
TOWNSHIP OF MUSKOKA LAKES

Project Number: 26-11893M
Date: April 22, 2026
Design By: DPH

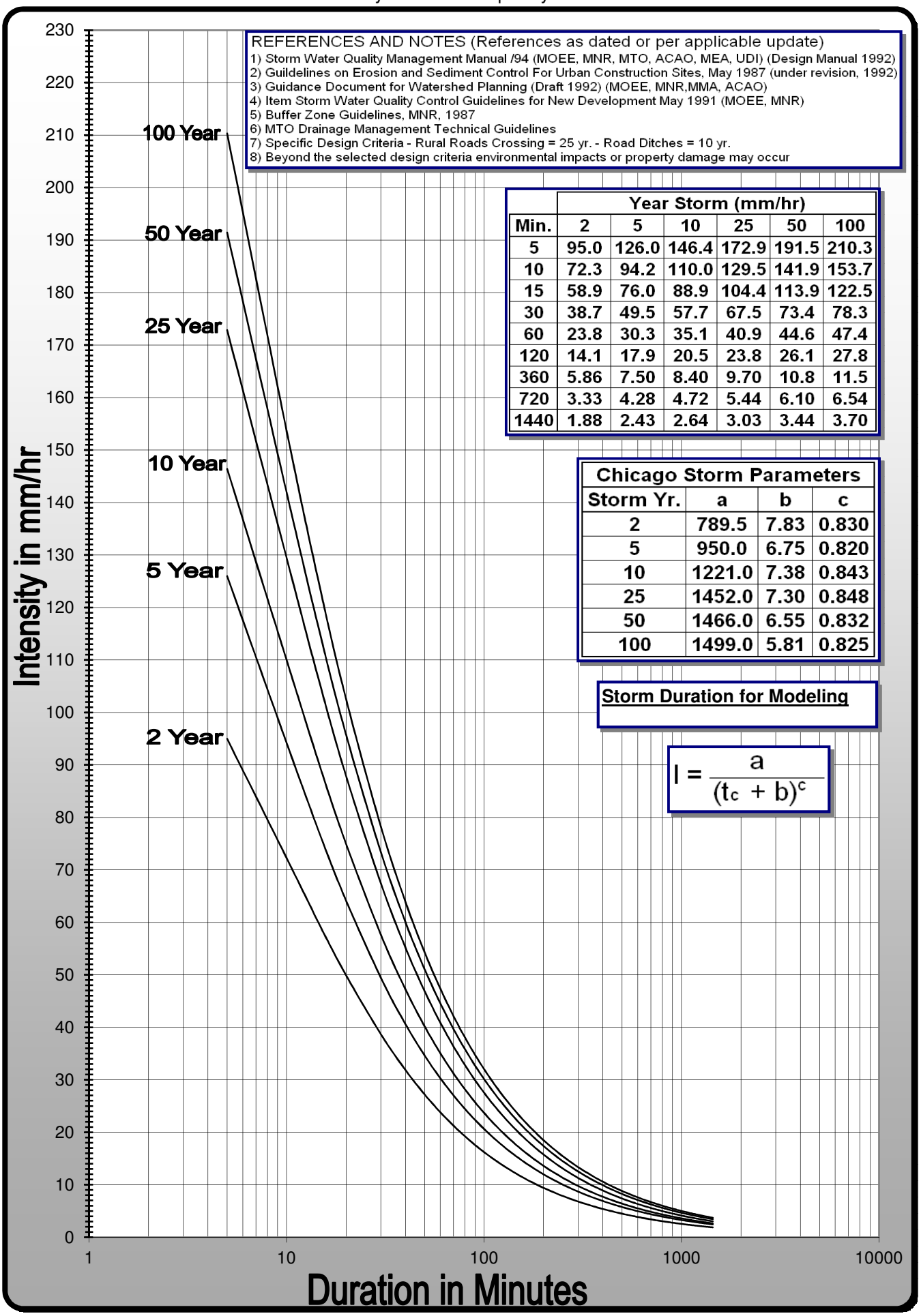
STEP	TASK	NOTES	PARAMETERS									VALUE USED	REQUIRED FIRE FLOW (L/MIN)
A	Determine the Construction Coefficient (C)		Non-Combustible Construction (Type II)									0.8	
B	Determine Total Effective Floor Area (A)	IF C = 1.0 - 1.5, Consider 100% of All Floor Areas IF C < 1.0, For Unprotected Vertical Openings, Consider 2 Largest Adjoining Floor Areas + 50% Remaining Floors Above to a Maximum of 8 IF C < 1.0, For Protected Vertical Openings, Consider Single Largest Floor Areas + 25% of the 2 Ajoining Floors Directly Above Exclude Basements from Calculation If Atleast 50% Below Grade	Protected or Unprotected Vertical Openings?							Unprotected Vertical Openings	Ground Floor Area	3206	
											2nd Floor Area	2888	
											3rd Floor Area	2888	
											4th Floor Area	2888	
											5th + Floor Area		
											Total Effective Floor Area	8982.00	
C	Determine Base Required Fire Flow (RFF)	RFF = 220C√A, Rounded to the Nearest 1,000 L/min									Actual RFF		16,680
											Rounded to the Nearest 1,000 L/min		17,000
D	Determine Occupancy Content Adjustment Factor	Apply Charge or Reduction To Base Required Fire Flow Calculated in Step C	Occupancy Type							Group/Division			
			Residential							C	% Total Effective Floor Area	90%	
											Occupancy Content Adjustment	-15%	-2,285
			Assembly (Not Elsewhere Classified in Group A)							A2	% Total Effective Floor Area	10%	
											Occupancy Content Adjustment	-8%	-133
											Total Occupancy Content Adjustment		-2,417
											Revised RFF		14,583
E	Determine Reduction for Automatic Sprinkler Protection										% Coverage of Sprinkler System	100%	
			Automatic Sprinkler System (Designed and Installed in Accordance with NFPA 13)?							Yes		-30%	
			Water Supply is Standard for Both the System and Fire Department Hose Lines?							Yes		-10%	
			Fully Supervised System?							Yes		-10%	
											Total Unrounded Reduction	-50%	-7,291
F	Determine Total Exposure Adjustment Charge		Direction	Firewall Separation?	Exposure Distance (m)	FUS Distance Range (m-m)	Exposed Length (m)	Exposed Height (Stories)	FUS Length-Height Factor (m x Stories)		Construction of Exposed Wall		
			North	No	12.8	10.1-20	72.7	1	61-80		Type III (Unprotected)	8%	
			South	No		0-3			0-20		N/A	0%	
			East	No	21.5	20.1-30	46.2	1	41-60		Type V	4%	
			West	No		0-3			0-20		N/A	0%	
											Total Unrounded Charge	12%	1,750
G	Determine Final Required Fire Flow (RFF)	Apply Charges and Reductions From Steps E & F To Required Fire Flow Calculated in Step D, Rounded to the Nearest 1,000 L/min									Final Required Fire Flow (Unrounded)		9,041
											Final Required Fire Flow (Rounded)		**9,000**

APPENDIX D

Stormwater Management Modelling & Calculations

MUSKOKA RAINFALL DATA

Intensity-Duration-Frequency Values



	Year Storm (mm/hr)					
Min.	2	5	10	25	50	100
5	95.0	126.0	146.4	172.9	191.5	210.3
10	72.3	94.2	110.0	129.5	141.9	153.7
15	58.9	76.0	88.9	104.4	113.9	122.5
30	38.7	49.5	57.7	67.5	73.4	78.3
60	23.8	30.3	35.1	40.9	44.6	47.4
120	14.1	17.9	20.5	23.8	26.1	27.8
360	5.86	7.50	8.40	9.70	10.8	11.5
720	3.33	4.28	4.72	5.44	6.10	6.54
1440	1.88	2.43	2.64	3.03	3.44	3.70

Chicago Storm Parameters			
Storm Yr.	a	b	c
2	789.5	7.83	0.830
5	950.0	6.75	0.820
10	1221.0	7.38	0.843
25	1452.0	7.30	0.848
50	1466.0	6.55	0.832
100	1499.0	5.81	0.825

Storm Duration for Modeling

$$I = \frac{a}{(t_c + b)^c}$$

Updated: Jan. 24, 2006

Table 2-2a Runoff curve numbers for urban areas [1/]

Cover description: Cover type and hydrologic condition	Average percent impervious area [2/]	Curve numbers for hydrologic soil group: A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.) [3/]:					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only) [4/]		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82
Developing urban areas					
Newly graded areas (pervious areas only, no vegetation) [5/]		77	86	91	94
Idle lands (CN's are determined using cover types similar to those in table 2-2c).					

[1] Average runoff condition, and $I_a = 0.2S$.

[2] The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.

[3] CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.

[4] Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.

[5] Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4 based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

Table 2-2b Runoff curve numbers for cultivated agricultural lands [1/]

Cover description			Curve numbers for hydrologic soil group			
Cover type	Treatment [2/]	Hydrologic condition [3/]	A	B	C	D
Fallow	Bare soil	—	77	86	91	94
	Crop residue cover (CR)	Poor	76	85	90	93
		Good	74	83	88	90
Row crops	Straight row (SR)	Poor	72	81	88	91
		Good	67	78	85	89
	SR + CR	Poor	71	80	87	90
		Good	64	75	82	85
	Contoured (C)	Poor	70	79	84	88
		Good	65	75	82	86
	C + CR	Poor	69	78	83	87
		Good	64	74	81	85
	Contoured & terraced (C&T)	Poor	66	74	80	82
		Good	62	71	78	81
	C&T+ CR	Poor	65	73	79	81
		Good	61	70	77	80
Small grain	SR	Poor	65	76	84	88
		Good	63	75	83	87
	SR + CR	Poor	64	75	83	86
		Good	60	72	80	84
	C	Poor	63	74	82	85
		Good	61	73	81	84
	C + CR	Poor	62	73	81	84
		Good	60	72	80	83
	C&T	Poor	61	72	79	82
		Good	59	70	78	81
	C&T+ CR	Poor	60	71	78	81
		Good	58	69	77	80
Close-seeded or broadcast legumes or rotation meadow	SR	Poor	66	77	85	89
		Good	58	72	81	85
	C	Poor	64	75	83	85
		Good	55	69	78	83
	C&T	Poor	63	73	80	83
		Good	51	67	76	80

[1] Average runoff condition, and I_a=0.2S

[2] Crop residue cover applies only if residue is on at least 5% of the surface throughout the year.

[3] Hydraulic condition is based on combination factors that affect infiltration and runoff, including (a) density and canopy of vegetative areas, (b) amount of year-round cover, (c) amount of grass or close-seeded legumes, (d) percent of residue cover on the land surface (good 20%), and (e) degree of surface roughness.

Poor: Factors impair infiltration and tend to increase runoff.

Good: Factors encourage average and better than average infiltration and tend to decrease runoff.

Table 2-2c Runoff curve numbers for other agricultural lands [1/]

Cover description		Curve numbers for hydrologic soil group			
Cover type	Hydrologic condition	A	B	C	D
Pasture, grassland, or range—continuous forage for grazing. [2/]	Poor	68	79	86	89
	Fair	49	69	79	84
	Good	39	61	74	80
Meadow—continuous grass, protected from grazing and generally mowed for hay.	—	30	58	71	78
Brush—brush-weed-grass mixture with brush the major element. [3/]	Poor	48	67	77	83
	Fair	35	56	70	77
	Good	30 [4/]	48	65	73
Woods—grass combination (orchard or tree farm). [5/]	Poor	57	73	82	86
	Fair	43	65	76	82
	Good	32	58	72	79
Woods. [6/]	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	30 [4/]	55	70	77
Farmsteads—buildings, lanes, driveways, and surrounding lots.	—	59	74	82	86

1 Average runoff condition, and $I_a = 0.2S$.

2 *Poor:* <50%) ground cover or heavily grazed with no mulch.
Fair: 50 to 75% ground cover and not heavily grazed.
Good: > 75% ground cover and lightly or only occasionally grazed.

3 *Poor*: <50% ground cover.
Fair: 50 to 75% ground cover.
Good: >75% ground cover.

4 Actual curve number is less than 30; use CN = 30 for runoff computations.

5 CN's shown were computed for areas with 50% woods and 50% grass (pasture) cover. Other combinations of conditions may be computed from the CN's for woods and pasture.

6 *Poor:* Forest litter, small trees, and brush are destroyed by heavy grazing or regular burning.
Fair: Woods are grazed but not burned, and some forest litter covers the soil.
Good: Woods are protected from grazing, and litter and brush adequately cover the soil.

Design Chart 1.07: Runoff Coefficients

- Urban for 5 to 10-Year Storms

Land Use		Runoff Coefficient	
		Min.	Max.
Pavement	- asphalt or concrete	0.80	0.95
- brick		0.70	0.85
Gravel roads and shoulders		0.40	0.60
Roofs		0.70	0.95
Business	- downtown	0.70	0.95
- neighbourhood		0.50	0.70
- light		0.50	0.80
- heavy		0.60	0.90
Residential	- single family urban	0.30	0.50
- multiple, detached		0.40	0.60
- multiple, attached		0.60	0.75
- suburban		0.25	0.40
Industrial	- light	0.50	0.80
- heavy		0.60	0.90
Apartments		0.50	0.70
Parks, cemeteries		0.10	0.25
Playgrounds (unpaved)		0.20	0.35
Railroad yards		0.20	0.35
Unimproved areas		0.10	0.30
Lawns	- Sandy soil		
- flat, to 2%		0.05	0.10
- average, 2 to 7%		0.10	0.15
- steep, over 7%		0.15	0.20
- Clayey soil			
- flat, to 2%		0.13	0.17
- average, 2 to 7%		0.18	0.22
- steep, over 7%		0.25	0.35

For flat or permeable surfaces, use the lower values. For steeper or more impervious surfaces, use the higher values. For return period of more than 10 years, increase above values as 25-year - add 10%, 50-year - add 20%, 100-year - add 25%.

The coefficients listed above are for unfrozen ground.

Design Chart 1.07: Runoff Coefficients (Continued)

- Rural

Land Use & Topography[3]	Soil Texture		
	Open Sand Loam	Loam or Silt Loam	Clay Loam or Clay
CULTIVATED			
Flat 0 - 5% Slopes	0.22	0.35	0.55
Rolling 5 - 10% Slopes	0.30	0.45	0.60
Hilly 10- 30% Slopes	0.40	0.65	0.70
PASTURE			
Flat 0 - 5% Slopes	0.10	0.28	0.40
Rolling 5 - 10% Slopes	0.15	0.35	0.45
Hilly 10- 30% Slopes	0.22	0.40	0.55
WOODLAND OR CUTOVER			
Flat 0 - 5% Slopes	0.08	0.25	0.35
Rolling 5 - 10% Slopes	0.12	0.30	0.42
Hilly 10- 30% Slopes	0.18	0.35	0.52
BARE ROCK	COVERAGE[3]		
	30%	50%	70%
Flat 0 - 5% Slopes	0.40	0.55	0.75
Rolling 5 - 10% Slopes	0.50	0.65	0.80
Hilly 10- 30% Slopes	0.55	0.70	0.85
LAKES AND WETLANDS	0.05		

[2] Terrain Slopes

[3] Interpolate for other values of % imperviousness

Sources: American Society of Civil Engineers - ASCE (1960)
U.S. Department of Agriculture (1972)

BALA LEGION RE-DEVELOPMENT

PRE-DEVELOPMENT SWM INPUT PARAMETERS

Township of Muskoka Lakes

Project Number: 26-11893M
Date: April 22, 2026
Design By: DH
File: Z:\Project Documents\11893M Bala Legion Redevelopment\FSR - Rezoning Work\Design Sheets\HYMO SWM Calculations.xls

Runoff Coefficients	
Land Use	**"C"**
Lawns & Parks (>7%)	0.35
Lawns & Parks (2-7%)	0.22
Lakes/Wetlands/SWMF	0.05
Semi-detached Rooftop Area	0.95
Townhouse Rooftop Area	0.95
Gravel Area	0.60
Woodland (0-5%)	0.35
Woodland (5-10%)	0.42
Paved areas	0.95

* Values taken from the MTO Drainage Management Manual Design Chart 1.07 (1997)

Pre-Development Runoff Coefficients:

Catchment	Total Area (m^2)	Open Space (>7%) (m^2)	Open Space (2-7%) (m^2)	Lakes / Wetlands / SWMF's (m^2)	Rooftop Area (m^2)	Townhouse Rooftop Area (m^2)	Gravel Area (m^2)	Woodland Area (0-5%) (m^2)	Woodland Area (5-10%) (m^2)	Paved Area (m^2)	Weighted C
101	6,810	1,400	3,945		340		885			240	0.36
102	920		545		250					125	0.52

Time of Concentration Calculations:

Catchment Parameters			
Catchment ID	=	101	
Catchment Area	=	0.6810	ha
Flow Length	=	80	m
Slope	=	0.04	m/m
Weighted Runoff Coefficient	=	0.36	

Catchment Parameters			
Catchment ID	=	102	
Catchment Area	=	0.0920	ha
Pervious Flow Length	=	17	m
Impervious Slope	=	0.03	m/m
Pervious Slope	=	0.05	m/m
Weighted Runoff Coefficient	=	0.52	

Time of Concentration Results			
Bransby Williams Formula (use for C>0.4)	=	3.6	min.
Airport Formula (use for C<=0.4)	=	13.7	min.
Time to Peak			
2/3 of Time of Concentration	=	0.15	hr

Pre-Development Curve Number (CN):

Catchment	Hydrologic Soil Group	Soil Texture	Total Area (m^2)	Lakes / Wetlands / SWMF's (m^2)	Forest / Woodlot Area (m^2)	Poor Open Space Area (m^2)	Lawn / Grass Area (m^2)	Gravel Area (m^2)	Impervious Area (m^2)	Weighted CN
101	C	Silty Clay / Sandy Silt	6,810	0	0	5,345	0	885	580	87.4
102	C	Silty Clay / Sandy Silt	545	0	0	0	545	0	0	74.0

Pre-Development Initial Abstraction (IA):

Catchment	Total Area (m^2)	Lawn/Grass Area (m^2)	Forest/Woodlot Area (m^2)	Lakes / Wetlands SWMF (m^2)	Poor Open Space Area (m^2)	Gravel Area (m^2)	Impervious Area (m^2)	Weighted IA
101	6,810		0	0	5,345	885	580	4.5
102	545	545	0	0	0	0	0	5.0

Pre-Development Modified Curve Number (CN*):

Catchment	Weighted CN (AMC II)	Total Precipitation (P), mm (100-Year SCS Type II Event)	Weighted CN (AMC III)	Soil Storage (S), mm (AMC III)	Initial Abstraction (IA), SCS Method (AMC III)	Runoff Volume (Q), mm (AMC III)	Soil Storage (S*), mm (AMC III)	Weighted CN* (AMC III)	Weighted CN* (AMC II)
101	87.4	78	94.1	15.9	3.2	61.7	14.0	94.8	88.8
102	74.0	78	86.7	38.8	5.8	46.9	40.5	86.2	73.2

* Process for calculating the Modified Curve Number (CN*) follows section 1.2 of the Visual Otthymo Reference Guide Version 5.1, prepared by Civica Infrastructure Inc. (2018)

For STANDHYD Command in Otthymo:

Pervious Area Calculations:	Catchment	Total Pervious Area (m2)
	102	545

Impervious Area Calulations:	Catchment	Total Directly Connected Area (m2)	Total Indirectly Connected Area (m2)	Total Impervious Area (m2)	% Ximp	% Timp
	102	375	0	375	40.8	40.8

SCS Curve Numbers	Hydrologic Soil Group						
Cover	**A**	**AB**	**B**	**BC**	**C**	**CD**	**D**
Wetlands / Lakes/ SWMF's	100	100	100	100	100	100	100
Forest/Woodlot	25	40	55	63	70	74	77
Poor Open Space	68	73	79	82	86	87	89
Lawn/Grass	39	50	61	68	74	77	80
Gravel	76	81	85	87	89	90	91
Impervious Areas	98	98	98	98	98	98	98

* Values taken from the USDA Urban Hydrology for Small Watersheds Manual Table 2-2a (1986)

Initial Abstraction / Depression Storage	
Cover	**Depth (mm)**
Wetlands / Lakes/ SWMF	0
Forest/Woodlot	10
Poor Open Space	5
Lawn/Grass	5
Crop	7
Impervious Areas	2

* Values taken from the USDA Urban Hydrology for Small Watersheds Manual (1986)

BALA LEGION RE-DEVELOPMENT

POST-DEVELOPMENT SWM INPUT PARAMETERS

Township of Muskoka Lakes

Project Number: 26-11893M
Date: April 22, 2026
Design By: DH
File: Z:\Project Documents\11893M Bala Legion Redevelopment\FSR - Rezoning Work\Design Sheets\HYMO SWM Calculations.xls

Runoff Coefficients	
Land Use	**"C"**
Lawns & Parks (2-7%)	0.22
Lawns & Parks (>7%)	0.35
Rooftop Area	0.95
Gravel Area	0.60
Townhouse Rooftop Area	0.95
Lakes/Wetlands/SWMF	0.05
Woodland (10-30%)	0.52
Woodland (5-10%)	0.42
Paved areas	0.95

* Values taken from the MTO Drainage Management Manual Design Chart 1.07 (1997)

Post-Development Runoff Coefficients:

Catchment	Total Area (m^2)	Lawn Area 2-7% (m^2)	Lawn Area >7% (m^2)	Rooftop Area (m^2)	Gravel Area (m^2)	Townhouse Rooftop Area (m^2)	Lakes / Wetlands / SWMF's (m^2)	Woodland Area (10-30%) (m^2)	Woodland Area (5-10%) (m^2)	Paved Area (m^2)	Weighted C
201	6,900	550		3,460						2,890	0.89
202	430	180	205							45	0.36
203	400	345								55	0.32

Time of Concentration Calculations:

Catchment Parameters			
Catchment ID	=	201	
Catchment Area	=	0.6900	ha
Pervious Flow Length	=	20	m
Impervious Slope	=	0.02	m/m
Pervious Slope	=	0.05	m/m
Weighted Runoff Coefficient	=	0.89	

Catchment Parameters			
Catchment ID	=	202	
Catchment Area	=	0.0430	ha
Flow Length	=	5	m
Slope	=	0.05	m/m
Weighted Runoff Coefficient	=	0.36	
Time of Concentration Results			
Bransby Williams Formula (use for C>0.4)	=	0.3	min.
Airport Formula (use for C<=0.4)	=	3.2	min.
Time to Peak			
2/3 of Time of Concentration	=	0.035	hr

Catchment Parameters			
Catchment ID	=	203	
Catchment Area	=	0.0400	ha
Flow Length	=	11	m
Slope	=	0.02	m/m
Weighted Runoff Coefficient	=	0.32	
Time of Concentration Results			
Bransby Williams Formula (use for C>0.4)	=	0.8	min.
Airport Formula (use for C<=0.4)	=	6.7	min.
Time to Peak			
2/3 of Time of Concentration	=	0.075	hr

Post-Development Curve Number (CN):

Catchment	Hydrologic Soil Group	Soil Texture	Total Area (m^2)	Lakes / Wetlands / SWMF's (m^2)	Forest / Woodlot Area (m^2)	Meadow / Field Area (m^2)	Lawn / Grass Area (m^2)	Gravel Area (m^2)	Impervious Area (m^2)	Weighted CN
201	C	Silty Clay / Sandy Silt	550	0	0	0	550	0	0	74.0
202	C	Silty Clay / Sandy Silt	430	0	0	0	385	0	45	76.5
203	C	Silty Clay / Sandy Silt	400	0	0	0	345	0	55	77.3

SCS Curve Numbers							
	Hydrologic Soil Group						
Cover	**A**	**AB**	**B**	**BC**	**C**	**CD**	**D**
Wetlands / Lakes/ SWMF's	100	100	100	100	100	100	100
Forest/Woodlot	25	40	55	63	70	74	77
Meadow/Field	30	44	58	65	71	75	78
Lawn/Grass	39	50	61	68	74	77	80
Gravel	76	81	85	87	89	90	91
Impervious Areas	98	98	98	98	98	98	98

* Values taken from the USDA Urban Hydrology for Small Watersheds Manual Table 2-2a (1986)

Post-Development Initial Abstraction (IA):

Catchment	Total Area (m^2)	Lawn/Grass Area (m^2)	Forest/Woodlot Area (m^2)	Lakes / Wetlands SWMF (m^2)	Meadow/Field Area (m^2)	Gravel Area (m^2)	Impervious Area (m^2)	Weighted IA
201	550	550	0	0	0	0	0	5.0
202	430	385	0	0	0	0	45	4.7
203	400	345	0	0	0	0	55	4.6

Initial Abstraction / Depression Storage	
Cover	**Depth (mm)**
Wetlands / Lakes/ SWMF	0
Forest/Woodlot	10
Meadow/Field	8
Lawn/Grass	5
Crop	7
Impervious Areas	2

* Values taken from the USDA Urban Hydrology for Small Watersheds Manual (1986)

Post-Development Modified Curve Number (CN*):

Catchment	Weighted CN (AMC II)	Total Precipitation (P), mm (100-Year SCS Type II Event)	Weighted CN (AMC III)	Soil Storage (S), mm (AMC III)	Initial Abstraction (IA), SCS Method (AMC III)	Runoff Volume (Q), mm (AMC III)	Soil Storage (S*), mm (AMC III)	Weighted CN* (AMC III)	Weighted CN* (AMC II)
201	74.0	78	86.7	38.8	5.8	46.9	40.5	86.2	73.2
202	76.5	78	88.2	33.9	5.1	49.8	34.7	88.0	76.1
203	77.3	78	88.7	32.4	4.9	50.7	33.0	88.5	77.0

* Process for calculating the Modified Curve Number (CN*) follows section 1.2 of the Visual Otthymo Reference Guide Version 5.1, prepared by Civica Infrastructure Inc. (2018)

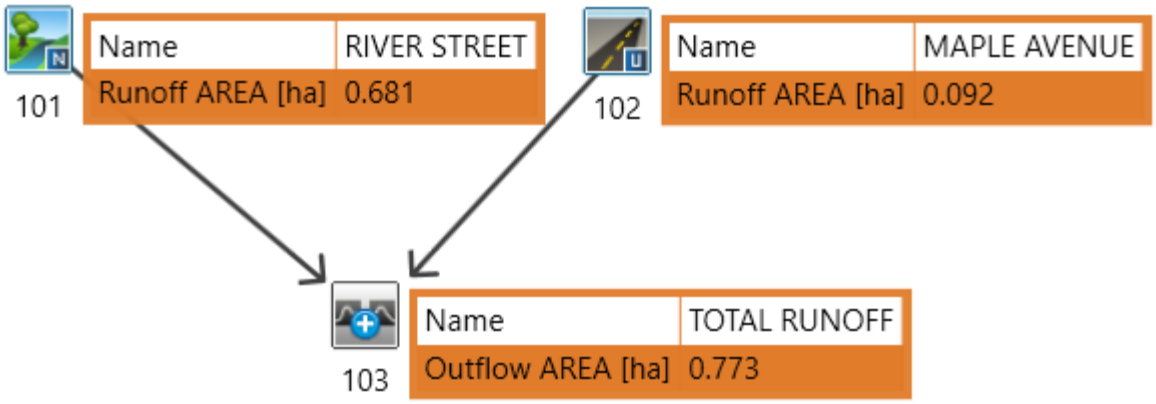
For STANDHYD Command in Otthymo:

Pervious Area Calculations:	Catchment	Total Pervious Area (m2)
	201	550

Impervious Area Calulations:	Catchment	Total Directly Connected Area (m2)	Total Indirectly Connected Area (m2)	Total Impervious Area (m2)	% Ximp	% Timp
	201	6,350	0	6,350	92.0	92.0

VISUAL OTTHYMO HYDROLOGICAL MODEL

PRE-DEVELOPMENT



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================================================================================
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       V    V   I    SSSSS  U   U    A    L             (v 6.2.2020)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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DATE: 04-23-2026                          TIME: 04:12:24

USER:


COMMENTS: _____________________________________________________________

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  ** SIMULATION : 100yr 12hr 5min SCS Type II   **
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```
|                  |              68700332-0658-4465-99f6-0b1522ba8396\52617754
| Ptotal= 78.49 mm |    Comments: 100yr 12hr 5min SCS Type II
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.00    0.00 |  3.08    3.14 |  6.17   14.13 |  9.25    2.75
                0.08    1.96 |  3.17    3.14 |  6.25   14.13 |  9.33    2.75
                0.17    1.96 |  3.25    3.14 |  6.33   14.13 |  9.42    2.75
                0.25    1.96 |  3.33    3.14 |  6.42   14.13 |  9.50    2.75
                0.33    1.96 |  3.42    3.14 |  6.50   14.13 |  9.58    2.75
                0.42    1.96 |  3.50    3.14 |  6.58    6.28 |  9.67    2.75
                0.50    1.96 |  3.58    3.14 |  6.67    6.28 |  9.75    2.75
                0.58    1.96 |  3.67    3.14 |  6.75    6.28 |  9.83    2.75
                0.67    1.96 |  3.75    3.14 |  6.83    6.28 |  9.92    2.75
                0.75    1.96 |  3.83    3.14 |  6.92    6.28 | 10.00    2.75
                0.83    1.96 |  3.92    3.14 |  7.00    6.28 | 10.08    1.57
                0.92    1.96 |  4.00    3.14 |  7.08    4.71 | 10.17    1.57
                1.00    1.96 |  4.08    4.71 |  7.17    4.71 | 10.25    1.57
                1.08    1.96 |  4.17    4.71 |  7.25    4.71 | 10.33    1.57
                1.17    1.96 |  4.25    4.71 |  7.33    4.71 | 10.42    1.57
                1.25    1.96 |  4.33    4.71 |  7.42    4.71 | 10.50    1.57
                1.33    1.96 |  4.42    4.71 |  7.50    4.71 | 10.58    1.57
                1.42    1.96 |  4.50    4.71 |  7.58    4.71 | 10.67    1.57
                1.50    1.96 |  4.58    6.28 |  7.67    4.71 | 10.75    1.57
                1.58    1.96 |  4.67    6.28 |  7.75    4.71 | 10.83    1.57
                1.67    1.96 |  4.75    6.28 |  7.83    4.71 | 10.92    1.57
                1.75    1.96 |  4.83    6.28 |  7.92    4.71 | 11.00    1.57
                1.83    1.96 |  4.92    6.28 |  8.00    4.71 | 11.08    1.57
                1.92    1.96 |  5.00    6.28 |  8.08    2.75 | 11.17    1.57
                2.00    1.96 |  5.08    9.42 |  8.17    2.75 | 11.25    1.57
                2.08    2.35 |  5.17    9.42 |  8.25    2.75 | 11.33    1.57
                2.17    2.35 |  5.25    9.42 |  8.33    2.75 | 11.42    1.57
                2.25    2.35 |  5.33    9.42 |  8.42    2.75 | 11.50    1.57
                2.33    2.35 |  5.42    9.42 |  8.50    2.75 | 11.58    1.57
                2.42    2.35 |  5.50    9.42 |  8.58    2.75 | 11.67    1.57
                2.50    2.35 |  5.58   37.68 |  8.67    2.75 | 11.75    1.57
                2.58    2.35 |  5.67   37.68 |  8.75    2.75 | 11.83    1.57
                2.67    2.35 |  5.75   37.68 |  8.83    2.75 | 11.92    1.57
                2.75    2.35 |  5.83  103.61 |  8.92    2.75 | 12.00    1.57
                2.83    2.35 |  5.92  103.61 |  9.00    2.75 |
                2.92    2.35 |  6.00  103.61 |  9.08    2.75 |
                3.00    2.35 |  6.08   14.13 |  9.17    2.75 |

--------------------------------------------------------------------------------

--------------------
| CALIB            |
| NASHYD   (  0101)|   Area    (ha)=   0.68   Curve Number   (CN)= 89.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   4.50   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.15
```

```
    Unit Hyd Qpeak  (cms)=   0.173

    PEAK FLOW       (cms)=   0.125 (i)
    TIME TO PEAK    (hrs)=   6.083
    RUNOFF VOLUME    (mm)=  51.649
    TOTAL RAINFALL   (mm)=  78.490
    RUNOFF COEFFICIENT   =   0.658

    (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0102)|   Area    (ha)=   0.09
|ID= 1 DT= 5.0 min |   Total Imp(%)=  40.80   Dir. Conn.(%)=  40.80
--------------------
                           IMPERVIOUS    PERVIOUS (i)
    Surface Area     (ha)=       0.04        0.05
    Dep. Storage     (mm)=       2.00        5.00
    Average Slope     (%)=       3.00        5.00
    Length            (m)=      24.77       17.00
    Mannings n           =      0.013       0.250

    Max.Eff.Inten.(mm/hr)=     103.61       53.42
              over (min)        5.00        5.00
    Storage Coeff.  (min)=       0.78 (ii)    4.46 (ii)
    Unit Hyd. Tpeak (min)=       5.00        5.00
    Unit Hyd. peak  (cms)=       0.34        0.23
                                                    *TOTALS*
    PEAK FLOW       (cms)=       0.01        0.01         0.019 (iii)
    TIME TO PEAK    (hrs)=       6.08        6.08          6.08
    RUNOFF VOLUME    (mm)=      76.49       32.26         50.28
    TOTAL RAINFALL   (mm)=      78.49       78.49         78.49
    RUNOFF COEFFICIENT   =       0.97        0.41          0.64

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

      (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  73.0    Ia = Dep. Storage  (Above)
     (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
          THAN THE STORAGE COEFFICIENT.
    (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0103)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
```

```
      ID1= 1 (  0101):     0.68   0.125     6.08    51.65
    + ID2= 2 (  0102):     0.09   0.019     6.08    50.28
      ================================================
      ID = 3 (  0103):     0.77   0.144     6.08    51.49

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
================================================================================
=======================

       V    V   I    SSSSS  U   U    A    L             (v 6.2.2020)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


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  Output  filename:
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0fd3-e54e-4095-b2e3-beb3bd7f5a54\scen
  Summary filename:
C:\Users\dhordyk\AppData\Local\Civica\VH5\2f607adb-176c-49e7-bd01-798ce897c738\f89f
0fd3-e54e-4095-b2e3-beb3bd7f5a54\scen


DATE: 04-23-2026                          TIME: 04:12:24

USER:


COMMENTS: _____________________________________________________________

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```

```
  ** SIMULATION : 100yr 4hr 5min Chicago        **
  ************************************************

--------------------
| CHICAGO STORM    |    IDF curve parameters: A=1499.000
| Ptotal= 63.91 mm |                          B=   5.810
--------------------                          C=   0.825
                       used in:   INTENSITY =  A / (t + B)^C

                       Duration of storm  =  4.00 hrs
                       Storm time step    =  5.00 min
                       Time to peak ratio =  0.33

                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.00    3.33 |  1.00   16.95 |  2.00   10.25 |  3.00    4.54
                0.08    3.55 |  1.08   27.22 |  2.08    9.23 |  3.08    4.35
                0.17    3.80 |  1.17   66.64 |  2.17    8.41 |  3.17    4.18
                0.25    4.09 |  1.25  210.33 |  2.25    7.73 |  3.25    4.02
                0.33    4.44 |  1.33   86.75 |  2.33    7.15 |  3.33    3.87
                0.42    4.87 |  1.42   46.62 |  2.42    6.66 |  3.42    3.73
                0.50    5.38 |  1.50   31.21 |  2.50    6.23 |  3.50    3.61
                0.58    6.04 |  1.58   23.30 |  2.58    5.86 |  3.58    3.49
                0.67    6.89 |  1.67   18.55 |  2.67    5.54 |  3.67    3.38
                0.75    8.06 |  1.75   15.40 |  2.75    5.25 |  3.75    3.28
                0.83    9.73 |  1.83   13.18 |  2.83    4.99 |  3.83    3.18
                0.92   12.33 |  1.92   11.52 |  2.92    4.76 |  3.92    3.10


--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0101)|   Area    (ha)=   0.68   Curve Number   (CN)= 89.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   4.50   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.15

     Unit Hyd Qpeak  (cms)=   0.173

     PEAK FLOW       (cms)=   0.113 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=  38.648
     TOTAL RAINFALL   (mm)=  63.912
     RUNOFF COEFFICIENT   =   0.605

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0102)|   Area    (ha)=   0.09
```

```
|ID= 1 DT= 5.0 min |   Total Imp(%)=  40.80   Dir. Conn.(%)=  40.80
--------------------

                                IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.04         0.05
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       3.00         5.00
     Length            (m)=      24.77        17.00
     Mannings n            =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     210.33        51.01
               over (min)        5.00         5.00
     Storage Coeff.  (min)=       0.59 (ii)    3.36 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.34         0.26
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.02         0.01          0.030 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.33          1.33
     RUNOFF VOLUME    (mm)=      61.91        22.71         38.67
     TOTAL RAINFALL   (mm)=      63.91        63.91         63.91
     RUNOFF COEFFICIENT   =       0.97         0.36          0.61

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  73.0    Ia = Dep. Storage  (Above)
       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
            THAN THE STORAGE COEFFICIENT.
      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0103)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0101):     0.68   0.113     1.50    38.65
     + ID2= 2 (  0102):     0.09   0.030     1.33    38.67
       ==========================================================
       ID = 3 (  0103):     0.77   0.127     1.42    38.65

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
================================================================================
========================

       V    V   I    SSSSS  U   U    A    L              (v 6.2.2020)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL
```

```
       OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
      O   O    T      T    H   H   Y Y   MM MM  O   O
      O   O    T      T    H   H    Y    M  M  O   O
       OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat

  Output  filename:
C:\Users\dhordyk\AppData\Local\Civica\VH5\2f607adb-176c-49e7-bd01-798ce897c738\0ea6
3217-5426-45cf-b4e2-53903f0f48d4\scen
  Summary filename:
C:\Users\dhordyk\AppData\Local\Civica\VH5\2f607adb-176c-49e7-bd01-798ce897c738\0ea6
3217-5426-45cf-b4e2-53903f0f48d4\scen


DATE: 04-23-2026                          TIME: 04:12:24

USER:



COMMENTS: _____________________________________________________


--------------------------------------------------------------------------------
------------------------
  ************************************************
  ** SIMULATION : 10yr 12hr 5min SCS Type II    **
  ************************************************


--------------------
|    READ STORM    |    Filename: C:\Users\dhordyk\AppD
|                  |              ata\Local\Temp\
|                  |              68700332-0658-4465-99f6-0b1522ba8396\d5194742
| Ptotal= 56.68 mm |    Comments: 10yr 12hr 5min SCS Type II
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.00    0.00 |  3.08    2.27 |  6.17   10.20 |  9.25    1.98
                0.08    1.42 |  3.17    2.27 |  6.25   10.20 |  9.33    1.98
                0.17    1.42 |  3.25    2.27 |  6.33   10.20 |  9.42    1.98
                0.25    1.42 |  3.33    2.27 |  6.42   10.20 |  9.50    1.98
                0.33    1.42 |  3.42    2.27 |  6.50   10.20 |  9.58    1.98
                0.42    1.42 |  3.50    2.27 |  6.58    4.53 |  9.67    1.98
                0.50    1.42 |  3.58    2.27 |  6.67    4.53 |  9.75    1.98
                0.58    1.42 |  3.67    2.27 |  6.75    4.53 |  9.83    1.98
                0.67    1.42 |  3.75    2.27 |  6.83    4.53 |  9.92    1.98
                0.75    1.42 |  3.83    2.27 |  6.92    4.53 | 10.00    1.98
                0.83    1.42 |  3.92    2.27 |  7.00    4.53 | 10.08    1.13
                0.92    1.42 |  4.00    2.27 |  7.08    3.40 | 10.17    1.13
                1.00    1.42 |  4.08    3.40 |  7.17    3.40 | 10.25    1.13
                1.08    1.42 |  4.17    3.40 |  7.25    3.40 | 10.33    1.13
                1.17    1.42 |  4.25    3.40 |  7.33    3.40 | 10.42    1.13
                1.25    1.42 |  4.33    3.40 |  7.42    3.40 | 10.50    1.13
                1.33    1.42 |  4.42    3.40 |  7.50    3.40 | 10.58    1.13
                1.42    1.42 |  4.50    3.40 |  7.58    3.40 | 10.67    1.13
                1.50    1.42 |  4.58    4.53 |  7.67    3.40 | 10.75    1.13
                1.58    1.42 |  4.67    4.53 |  7.75    3.40 | 10.83    1.13
                1.67    1.42 |  4.75    4.53 |  7.83    3.40 | 10.92    1.13
                1.75    1.42 |  4.83    4.53 |  7.92    3.40 | 11.00    1.13
                1.83    1.42 |  4.92    4.53 |  8.00    3.40 | 11.08    1.13
                1.92    1.42 |  5.00    4.53 |  8.08    1.98 | 11.17    1.13
                2.00    1.42 |  5.08    6.80 |  8.17    1.98 | 11.25    1.13
                2.08    1.70 |  5.17    6.80 |  8.25    1.98 | 11.33    1.13
                2.17    1.70 |  5.25    6.80 |  8.33    1.98 | 11.42    1.13
                2.25    1.70 |  5.33    6.80 |  8.42    1.98 | 11.50    1.13
                2.33    1.70 |  5.42    6.80 |  8.50    1.98 | 11.58    1.13
                2.42    1.70 |  5.50    6.80 |  8.58    1.98 | 11.67    1.13
                2.50    1.70 |  5.58   27.21 |  8.67    1.98 | 11.75    1.13
                2.58    1.70 |  5.67   27.21 |  8.75    1.98 | 11.83    1.13
                2.67    1.70 |  5.75   27.21 |  8.83    1.98 | 11.92    1.13
                2.75    1.70 |  5.83   74.82 |  8.92    1.98 | 12.00    1.13
                2.83    1.70 |  5.92   74.82 |  9.00    1.98 |
                2.92    1.70 |  6.00   74.82 |  9.08    1.98 |
                3.00    1.70 |  6.08   10.20 |  9.17    1.98 |

--------------------------------------------------------------------------------

--------------------
| CALIB            |
| NASHYD   (  0101)|   Area    (ha)=   0.68   Curve Number   (CN)= 89.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   4.50   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.15

     Unit Hyd Qpeak  (cms)=   0.173

     PEAK FLOW       (cms)=   0.079 (i)
     TIME TO PEAK    (hrs)=   6.083
     RUNOFF VOLUME    (mm)=  32.391
     TOTAL RAINFALL   (mm)=  56.680
     RUNOFF COEFFICIENT   =   0.571
```

```
     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

---------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0102)|   Area    (ha)=   0.09
|ID= 1 DT= 5.0 min |   Total Imp(%)=  40.80   Dir. Conn.(%)=  40.80
--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      0.04         0.05
     Dep. Storage     (mm)=      2.00         5.00
     Average Slope     (%)=      3.00         5.00
     Length            (m)=     24.77        17.00
     Mannings n           =     0.013        0.250

     Max.Eff.Inten.(mm/hr)=     74.82        30.62
               over (min)       5.00        10.00
     Storage Coeff.  (min)=     0.89 (ii)    5.08 (ii)
     Unit Hyd. Tpeak (min)=     5.00        10.00
     Unit Hyd. peak  (cms)=     0.34         0.16
                                                      *TOTALS*
     PEAK FLOW       (cms)=     0.01         0.00         0.012 (iii)
     TIME TO PEAK    (hrs)=     6.08         6.08          6.08
     RUNOFF VOLUME    (mm)=    54.68        18.34         33.13
     TOTAL RAINFALL   (mm)=    56.68        56.68         56.68
     RUNOFF COEFFICIENT   =     0.96         0.32          0.58

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  73.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

---------------------------------------------------------------------------

--------------------
| ADD HYD  (  0103)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0101):     0.68   0.079     6.08    32.39
      + ID2= 2 (  0102):     0.09   0.012     6.08    33.13
        ====================================================
        ID = 3 (  0103):     0.77   0.091     6.08    32.48

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
---------------------------------------------------------------------------
===========================================================================
```

```
=======================

       V    V   I    SSSSS  U   U    A    L              (v 6.2.2020)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat

  Output  filename:
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5c3a-9755-43d0-b91a-5cbf8c2ea9bc\scen
  Summary filename:
C:\Users\dhordyk\AppData\Local\Civica\VH5\2f607adb-176c-49e7-bd01-798ce897c738\7eac
5c3a-9755-43d0-b91a-5cbf8c2ea9bc\scen


DATE: 04-23-2026                          TIME: 04:12:23

USER:


COMMENTS: _____________________________________________________


---------------------------------------------------------------------------
-----------------------
  ************************************************
  ** SIMULATION : 10yr 4hr 5min Chicago         **
  ************************************************

--------------------
| CHICAGO STORM    |    IDF curve parameters: A=1221.000
| Ptotal= 46.90 mm |                          B=   7.380
--------------------                          C=   0.843
                        used in:   INTENSITY =  A / (t + B)^C
```

```
                     Duration of storm  =  4.00 hrs
                     Storm time step    =  5.00 min
                     Time to peak ratio =  0.33

               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.00    2.29 |  1.00   12.88 |  2.00    7.57 |  3.00    3.19
               0.08    2.45 |  1.08   21.06 |  2.08    6.78 |  3.08    3.05
               0.17    2.64 |  1.17   51.15 |  2.17    6.14 |  3.17    2.92
               0.25    2.86 |  1.25  146.40 |  2.25    5.61 |  3.25    2.80
               0.33    3.12 |  1.33   66.09 |  2.33    5.16 |  3.33    2.69
               0.42    3.43 |  1.42   36.28 |  2.42    4.79 |  3.42    2.59
               0.50    3.82 |  1.50   24.24 |  2.50    4.46 |  3.50    2.50
               0.58    4.32 |  1.58   17.95 |  2.58    4.18 |  3.58    2.41
               0.67    4.97 |  1.67   14.16 |  2.67    3.94 |  3.67    2.33
               0.75    5.86 |  1.75   11.65 |  2.75    3.72 |  3.75    2.26
               0.83    7.16 |  1.83    9.88 |  2.83    3.52 |  3.83    2.19
               0.92    9.21 |  1.92    8.57 |  2.92    3.35 |  3.92    2.13


---------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0101)|   Area    (ha)=   0.68   Curve Number   (CN)= 89.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   4.50   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.15

     Unit Hyd Qpeak  (cms)=   0.173

     PEAK FLOW       (cms)=   0.068 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=  24.218
     TOTAL RAINFALL   (mm)=  46.896
     RUNOFF COEFFICIENT   =   0.516

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

---------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0102)|   Area    (ha)=   0.09
|ID= 1 DT= 5.0 min |   Total Imp(%)=  40.80   Dir. Conn.(%)=  40.80
--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      0.04         0.05
     Dep. Storage     (mm)=      2.00         5.00
     Average Slope     (%)=      3.00         5.00
     Length            (m)=     24.77        17.00
     Mannings n           =     0.013        0.250
```

```
     Max.Eff.Inten.(mm/hr)=    146.40        27.14
               over (min)        5.00         5.00
     Storage Coeff.  (min)=      0.68 (ii)    3.88 (ii)
     Unit Hyd. Tpeak (min)=      5.00         5.00
     Unit Hyd. peak  (cms)=      0.34         0.25
                                                      *TOTALS*
     PEAK FLOW       (cms)=      0.02         0.00         0.019 (iii)
     TIME TO PEAK    (hrs)=      1.33         1.33          1.33
     RUNOFF VOLUME    (mm)=     44.90        12.92         25.95
     TOTAL RAINFALL   (mm)=     46.90        46.90         46.90
     RUNOFF COEFFICIENT   =      0.96         0.28          0.55

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  73.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

---------------------------------------------------------------------------

--------------------
| ADD HYD  (  0103)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0101):     0.68   0.068     1.50    24.22
      + ID2= 2 (  0102):     0.09   0.019     1.33    25.95
        ====================================================
        ID = 3 (  0103):     0.77   0.075     1.42    24.42

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
---------------------------------------------------------------------------
===========================================================================
=======================

       V    V   I    SSSSS  U   U    A    L              (v 6.2.2020)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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```

***** D E T A I L E D O U T P U T *****

  Input filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat

  Output filename:
C:\Users\dhordyk\AppData\Local\Civica\VH5\2f607adb-176c-49e7-bd01-798ce897c738\d57d8f23-3590-45f7-9691-15b0c9e6cbe0\scen
  Summary filename:
C:\Users\dhordyk\AppData\Local\Civica\VH5\2f607adb-176c-49e7-bd01-798ce897c738\d57d8f23-3590-45f7-9691-15b0c9e6cbe0\scen

DATE: 04-23-2026   TIME: 04:12:24

USER:

COMMENTS: _____

****
** SIMULATION : 25yr 12hr 5min SCS Type II   **
****

READ STORM	Filename: C:\Users\dhordyk\AppData\Local\Temp\68700332-0658-4465-99f6-0b1522ba8396\2fd4d62c
Ptotal= 65.23 mm	Comments: 25yr 12hr 5min SCS Type II

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	0.00	3.08	2.61	6.17	11.74	9.25	2.28
0.08	1.63	3.17	2.61	6.25	11.74	9.33	2.28
0.17	1.63	3.25	2.61	6.33	11.74	9.42	2.28
0.25	1.63	3.33	2.61	6.42	11.74	9.50	2.28
0.33	1.63	3.42	2.61	6.50	11.74	9.58	2.28
0.42	1.63	3.50	2.61	6.58	5.22	9.67	2.28
0.50	1.63	3.58	2.61	6.67	5.22	9.75	2.28
0.58	1.63	3.67	2.61	6.75	5.22	9.83	2.28
0.67	1.63	3.75	2.61	6.83	5.22	9.92	2.28
0.75	1.63	3.83	2.61	6.92	5.22	10.00	2.28
0.83	1.63	3.92	2.61	7.00	5.22	10.08	1.30
0.92	1.63	4.00	2.61	7.08	3.91	10.17	1.30
1.00	1.63	4.08	3.91	7.17	3.91	10.25	1.30
1.08	1.63	4.17	3.91	7.25	3.91	10.33	1.30
1.17	1.63	4.25	3.91	7.33	3.91	10.42	1.30
1.25	1.63	4.33	3.91	7.42	3.91	10.50	1.30
1.33	1.63	4.42	3.91	7.50	3.91	10.58	1.30
1.42	1.63	4.50	3.91	7.58	3.91	10.67	1.30
1.50	1.63	4.58	5.22	7.67	3.91	10.75	1.30
1.58	1.63	4.67	5.22	7.75	3.91	10.83	1.30
1.67	1.63	4.75	5.22	7.83	3.91	10.92	1.30
1.75	1.63	4.83	5.22	7.92	3.91	11.00	1.30
1.83	1.63	4.92	5.22	8.00	3.91	11.08	1.30
1.92	1.63	5.00	5.22	8.08	2.28	11.17	1.30
2.00	1.63	5.08	7.83	8.17	2.28	11.25	1.30
2.08	1.96	5.17	7.83	8.25	2.28	11.33	1.30
2.17	1.96	5.25	7.83	8.33	2.28	11.42	1.30
2.25	1.96	5.33	7.83	8.42	2.28	11.50	1.30
2.33	1.96	5.42	7.83	8.50	2.28	11.58	1.30
2.42	1.96	5.50	7.83	8.58	2.28	11.67	1.30
2.50	1.96	5.58	31.31	8.67	2.28	11.75	1.30
2.58	1.96	5.67	31.31	8.75	2.28	11.83	1.30
2.67	1.96	5.75	31.31	8.83	2.28	11.92	1.30
2.75	1.96	5.83	86.10	8.92	2.28	12.00	1.30
2.83	1.96	5.92	86.10	9.00	2.28		
2.92	1.96	6.00	86.10	9.08	2.28		
3.00	1.96	6.08	11.74	9.17	2.28		

CALIB	
NASHYD (0101)	Area (ha)= 0.68 Curve Number (CN)= 89.0
ID= 1 DT= 5.0 min	Ia (mm)= 4.50 # of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.15

Unit Hyd Qpeak (cms)= 0.173

PEAK FLOW (cms)= 0.097 (i)
TIME TO PEAK (hrs)= 6.083
RUNOFF VOLUME (mm)= 39.803
TOTAL RAINFALL (mm)= 65.230
RUNOFF COEFFICIENT = 0.610

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0102)	Area (ha)= 0.09
ID= 1 DT= 5.0 min	Total Imp(%)= 40.80 Dir. Conn.(%)= 40.80

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.04	0.05
Dep. Storage (mm)=	2.00	5.00
Average Slope (%)=	3.00	5.00
Length (m)=	24.77	17.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	86.10	39.16
over (min)	5.00	5.00
Storage Coeff. (min)=	0.84 (ii)	4.80 (ii)
Unit Hyd. Tpeak (min)=	5.00	5.00
Unit Hyd. peak (cms)=	0.34	0.22

		TOTALS
PEAK FLOW (cms)=	0.01	0.01	0.015 (iii)
TIME TO PEAK (hrs)=	6.08	6.08	6.08
RUNOFF VOLUME (mm)=	63.23	23.53	39.71
TOTAL RAINFALL (mm)=	65.23	65.23	65.23
RUNOFF COEFFICIENT =	0.97	0.36	0.61

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 73.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (0103)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0101):	0.68	0.097	6.08	39.80
+ ID2= 2 (0102):	0.09	0.015	6.08	39.71
ID = 3 (0103):	0.77	0.112	6.08	39.79

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

FINISH

V V I SSSSS U U A L (v 6.2.2020)

V V I SS U U A A L
V V I SS U U AAAAA L
V V I SS U U A A L
VV I SSSSS UUUUU A A LLLLL

OOO TTTTT TTTTT H H Y Y M M OOO TM
O O T T H H Y Y MM MM O O
O O T T H H Y M M O O
OOO T T H H Y M M OOO

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***** D E T A I L E D O U T P U T *****

  Input filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat

  Output filename:
C:\Users\dhordyk\AppData\Local\Civica\VH5\2f607adb-176c-49e7-bd01-798ce897c738\e6f2a1ea-a5be-4770-bc91-ffd8bb697004\scen
  Summary filename:
C:\Users\dhordyk\AppData\Local\Civica\VH5\2f607adb-176c-49e7-bd01-798ce897c738\e6f2a1ea-a5be-4770-bc91-ffd8bb697004\scen

DATE: 04-23-2026   TIME: 04:12:24

USER:

COMMENTS: _____

****
** SIMULATION : 25yr 4hr 5min Chicago   **
****

CHICAGO STORM	IDF curve parameters: A=1452.000
Ptotal= 54.27 mm	B= 7.300
	C= 0.848
	used in: INTENSITY = A / (t + B)^C

Duration of storm = 4.00 hrs
Storm time step = 5.00 min

Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	2.58	1.00	14.76	2.00	8.62	3.00	3.60
0.08	2.76	1.08	24.26	2.08	7.71	3.08	3.44
0.17	2.97	1.17	59.58	2.17	6.97	3.17	3.29
0.25	3.22	1.25	172.87	2.25	6.37	3.25	3.16
0.33	3.52	1.33	77.18	2.33	5.86	3.33	3.03
0.42	3.88	1.42	42.06	2.42	5.43	3.42	2.92
0.50	4.32	1.50	27.96	2.50	5.06	3.50	2.82
0.58	4.89	1.58	20.63	2.58	4.73	3.58	2.72
0.67	5.63	1.67	16.23	2.67	4.45	3.67	2.63
0.75	6.66	1.75	13.33	2.75	4.20	3.75	2.54
0.83	8.15	1.83	11.29	2.83	3.98	3.83	2.47
0.92	10.52	1.92	9.78	2.92	3.78	3.92	2.39

CALIB			
NASHYD (0101)	Area (ha)=	0.68	Curve Number (CN)= 89.0
ID= 1 DT= 5.0 min	Ia (mm)=	4.50	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.15	

Unit Hyd Qpeak (cms)= 0.173

PEAK FLOW (cms)= 0.088 (i)
TIME TO PEAK (hrs)= 1.500
RUNOFF VOLUME (mm)= 30.341
TOTAL RAINFALL (mm)= 54.268
RUNOFF COEFFICIENT = 0.559

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB			
STANDHYD (0102)	Area (ha)=	0.09	
ID= 1 DT= 5.0 min	Total Imp(%)=	40.80	Dir. Conn.(%)= 40.80

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.04	0.05
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	3.00	5.00
Length	(m)=	24.77	17.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		172.87	37.10
over (min)		5.00	5.00
Storage Coeff. (min)=		0.64 (ii)	3.63 (ii)
Unit Hyd. Tpeak (min)=		5.00	5.00
Unit Hyd. peak (cms)=		0.34	0.25
			TOTALS
PEAK FLOW (cms)=		0.02	0.01 0.023 (iii)
TIME TO PEAK (hrs)=		1.33	1.33 1.33
RUNOFF VOLUME (mm)=		52.27	16.95 31.34
TOTAL RAINFALL (mm)=		54.27	54.27 54.27
RUNOFF COEFFICIENT =		0.96	0.31 0.58

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 73.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (0103)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0101):	0.68	0.088	1.50	30.34
+ ID2= 2 (0102):	0.09	0.023	1.33	31.34
ID = 3 (0103):	0.77	0.098	1.42	30.46

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

V V I SSSSS U U A L (v 6.2.2020)
V V I SS U U A A L
V V I SS U U AAAAA L
V V I SS U U A A L
VV I SSSSS UUUUU A A LLLLL

OOO TTTTT TTTTT H H Y Y M M OOO TM
O O T T H H Y Y MM MM O O
O O T T H H Y M M O O
OOO T T H H Y M M OOO

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***** D E T A I L E D O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat

Output filename:
C:\Users\dhordyk\AppData\Local\Civica\VH5\2f607adb-176c-49e7-bd01-798ce897c738\60b4
35d6-e8c8-43ec-ab0e-69d3b5b0d360\scen
Summary filename:
C:\Users\dhordyk\AppData\Local\Civica\VH5\2f607adb-176c-49e7-bd01-798ce897c738\60b4
35d6-e8c8-43ec-ab0e-69d3b5b0d360\scen

DATE: 04-23-2026 TIME: 04:12:24

USER:

COMMENTS: _____

****
** SIMULATION : 2yr 12hr 5min SCS Type II **
****

READ STORM	Filename: C:\Users\dhordyk\AppData\Local\Temp\68700332-0658-4465-99f6-0b1522ba8396\7e86db60
Ptotal= 39.91 mm	Comments: 2yr 12hr 5min SCS Type II

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	0.00	3.08	1.60	6.17	7.18	9.25	1.40
0.08	1.00	3.17	1.60	6.25	7.18	9.33	1.40
0.17	1.00	3.25	1.60	6.33	7.18	9.42	1.40
0.25	1.00	3.33	1.60	6.42	7.18	9.50	1.40
0.33	1.00	3.42	1.60	6.50	7.18	9.58	1.40
0.42	1.00	3.50	1.60	6.58	3.19	9.67	1.40
0.50	1.00	3.58	1.60	6.67	3.19	9.75	1.40
0.58	1.00	3.67	1.60	6.75	3.19	9.83	1.40
0.67	1.00	3.75	1.60	6.83	3.19	9.92	1.40
0.75	1.00	3.83	1.60	6.92	3.19	10.00	1.40
0.83	1.00	3.92	1.60	7.00	3.19	10.08	0.80
0.92	1.00	4.00	1.60	7.08	2.39	10.17	0.80
1.00	1.00	4.08	2.39	7.17	2.39	10.25	0.80
1.08	1.00	4.17	2.39	7.25	2.39	10.33	0.80
1.17	1.00	4.25	2.39	7.33	2.39	10.42	0.80
1.25	1.00	4.33	2.39	7.42	2.39	10.50	0.80
1.33	1.00	4.42	2.39	7.50	2.39	10.58	0.80
1.42	1.00	4.50	2.39	7.58	2.39	10.67	0.80
1.50	1.00	4.58	3.19	7.67	2.39	10.75	0.80
1.58	1.00	4.67	3.19	7.75	2.39	10.83	0.80
1.67	1.00	4.75	3.19	7.83	2.39	10.92	0.80
1.75	1.00	4.83	3.19	7.92	2.39	11.00	0.80
1.83	1.00	4.92	3.19	8.00	2.39	11.08	0.80
1.92	1.00	5.00	3.19	8.08	1.40	11.17	0.80
2.00	1.00	5.08	4.79	8.17	1.40	11.25	0.80
2.08	1.20	5.17	4.79	8.25	1.40	11.33	0.80
2.17	1.20	5.25	4.79	8.33	1.40	11.42	0.80
2.25	1.20	5.33	4.79	8.42	1.40	11.50	0.80
2.33	1.20	5.42	4.79	8.50	1.40	11.58	0.80
2.42	1.20	5.50	4.79	8.58	1.40	11.67	0.80
2.50	1.20	5.58	19.16	8.67	1.40	11.75	0.80
2.58	1.20	5.67	19.16	8.75	1.40	11.83	0.80
2.67	1.20	5.75	19.16	8.83	1.40	11.92	0.80
2.75	1.20	5.83	52.68	8.92	1.40	12.00	0.80
2.83	1.20	5.92	52.68	9.00	1.40		
2.92	1.20	6.00	52.68	9.08	1.40		
3.00	1.20	6.08	7.18	9.17	1.40		

CALIB			
NASHYD (0101)	Area (ha)=	0.68	Curve Number (CN)= 89.0
ID= 1 DT= 5.0 min	Ia (mm)=	4.50	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.15	

Unit Hyd Qpeak (cms)= 0.173

PEAK FLOW (cms)= 0.045 (i)
TIME TO PEAK (hrs)= 6.083
RUNOFF VOLUME (mm)= 18.661
TOTAL RAINFALL (mm)= 39.910
RUNOFF COEFFICIENT = 0.468

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB			
STANDHYD (0102)	Area (ha)=	0.09	
ID= 1 DT= 5.0 min	Total Imp(%)=	40.80	Dir. Conn.(%)= 40.80

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.04	0.05

```
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       3.00         5.00
     Length            (m)=      24.77        17.00
     Mannings n            =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=      52.68        15.88
               over (min)        5.00        10.00
     Storage Coeff.  (min)=       1.03 (ii)    5.84 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.34         0.15
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.01         0.00         0.007 (iii)
     TIME TO PEAK    (hrs)=       6.08         6.08          6.08
     RUNOFF VOLUME    (mm)=      37.91         9.46         21.04
     TOTAL RAINFALL   (mm)=      39.91        39.91         39.91
     RUNOFF COEFFICIENT   =       0.95         0.24          0.53

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  73.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0103)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0101):     0.68   0.045     6.08    18.66
     + ID2= 2 (  0102):     0.09   0.007     6.08    21.04
       ====================================================
       ID = 3 (  0103):     0.77   0.053     6.08    18.94

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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================================================================================
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       V    V   I    SSSSS  U   U    A    L             (v 6.2.2020)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
```

```
       OOO    T     T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat

  Output  filename:
C:\Users\dhordyk\AppData\Local\Civica\VH5\2f607adb-176c-49e7-bd01-798ce897c738\3710
a764-1fd7-43ab-b863-f1de8e5d04d7\scen
  Summary filename:
C:\Users\dhordyk\AppData\Local\Civica\VH5\2f607adb-176c-49e7-bd01-798ce897c738\3710
a764-1fd7-43ab-b863-f1de8e5d04d7\scen


DATE: 04-23-2026                          TIME: 04:12:23

USER:


COMMENTS: _____

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  ***********************************************
  ** SIMULATION : 2yr 4hr 5min Chicago          **
  ***********************************************

--------------------
| CHICAGO STORM    |    IDF curve parameters: A= 789.500
| Ptotal= 32.53 mm |                          B=   7.830
--------------------                          C=   0.830
                        used in:   INTENSITY =  A / (t + B)^C

                        Duration of storm  =  4.00 hrs
                        Storm time step    =  5.00 min
                        Time to peak ratio =  0.33

               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.00    1.71 |  1.00    9.23 |  2.00    5.50 |  3.00    2.37
               0.08    1.83 |  1.08   14.87 |  2.08    4.94 |  3.08    2.26
               0.17    1.96 |  1.17   34.91 |  2.17    4.48 |  3.17    2.17
               0.25    2.12 |  1.25   94.96 |  2.25    4.11 |  3.25    2.08
```

```
               0.33    2.31 |  1.33   44.71 |  2.33    3.79 |  3.33    2.00
               0.42    2.54 |  1.42   25.16 |  2.42    3.52 |  3.42    1.93
               0.50    2.82 |  1.50   17.04 |  2.50    3.28 |  3.50    1.86
               0.58    3.18 |  1.58   12.74 |  2.58    3.08 |  3.58    1.80
               0.67    3.65 |  1.67   10.12 |  2.67    2.90 |  3.67    1.74
               0.75    4.29 |  1.75    8.37 |  2.75    2.75 |  3.75    1.69
               0.83    5.21 |  1.83    7.13 |  2.83    2.61 |  3.83    1.64
               0.92    6.66 |  1.92    6.21 |  2.92    2.48 |  3.92    1.59


--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0101)|   Area    (ha)=   0.68   Curve Number   (CN)= 89.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   4.50   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.15

     Unit Hyd Qpeak  (cms)=   0.173

     PEAK FLOW       (cms)=   0.034 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=  13.142
     TOTAL RAINFALL   (mm)=  32.526
     RUNOFF COEFFICIENT   =   0.404

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0102)|   Area    (ha)=   0.09
|ID= 1 DT= 5.0 min |   Total Imp(%)=  40.80   Dir. Conn.(%)=  40.80
--------------------

                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.04         0.05
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       3.00         5.00
     Length            (m)=      24.77        17.00
     Mannings n            =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=      94.96        11.41
               over (min)        5.00         5.00
     Storage Coeff.  (min)=       0.81 (ii)    4.61 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.34         0.22
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.01         0.00         0.011 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.42          1.33
     RUNOFF VOLUME    (mm)=      30.53         6.24         16.13
     TOTAL RAINFALL   (mm)=      32.53        32.53         32.53
```

```
     RUNOFF COEFFICIENT   =       0.94         0.19          0.50

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  73.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0103)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0101):     0.68   0.034     1.50    13.14
     + ID2= 2 (  0102):     0.09   0.011     1.33    16.13
       ====================================================
       ID = 3 (  0103):     0.77   0.037     1.50    13.50

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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================================================================================
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       V    V   I    SSSSS  U   U    A    L             (v 6.2.2020)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat

  Output  filename:
C:\Users\dhordyk\AppData\Local\Civica\VH5\2f607adb-176c-49e7-bd01-798ce897c738\2dad
fb7d-4c77-48e6-a163-de717a711d8a\scen
  Summary filename:
```

C:\Users\dhordyk\AppData\Local\Civica\VH5\2f607adb-176c-49e7-bd01-798ce897c738\2dadfb7d-4c77-48e6-a163-de717a711d8a\scen

DATE: 04-23-2026 TIME: 04:12:24

USER:

COMMENTS: _____

****
** SIMULATION : 50yr 12hr 5min SCS Type II **
****

READ STORM	Filename: C:\Users\dhordyk\AppData\Local\Temp\68700332-0658-4465-99f6-0b1522ba8396\483651c5
Ptotal= 73.24 mm	Comments: 50yr 12hr 5min SCS Type II

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	0.00	3.08	2.93	6.17	13.18	9.25	2.56
0.08	1.83	3.17	2.93	6.25	13.18	9.33	2.56
0.17	1.83	3.25	2.93	6.33	13.18	9.42	2.56
0.25	1.83	3.33	2.93	6.42	13.18	9.50	2.56
0.33	1.83	3.42	2.93	6.50	13.18	9.58	2.56
0.42	1.83	3.50	2.93	6.58	5.86	9.67	2.56
0.50	1.83	3.58	2.93	6.67	5.86	9.75	2.56
0.58	1.83	3.67	2.93	6.75	5.86	9.83	2.56
0.67	1.83	3.75	2.93	6.83	5.86	9.92	2.56
0.75	1.83	3.83	2.93	6.92	5.86	10.00	2.56
0.83	1.83	3.92	2.93	7.00	5.86	10.08	1.46
0.92	1.83	4.00	2.93	7.08	4.39	10.17	1.46
1.00	1.83	4.08	4.39	7.17	4.39	10.25	1.46
1.08	1.83	4.17	4.39	7.25	4.39	10.33	1.46
1.17	1.83	4.25	4.39	7.33	4.39	10.42	1.46
1.25	1.83	4.33	4.39	7.42	4.39	10.50	1.46
1.33	1.83	4.42	4.39	7.50	4.39	10.58	1.46
1.42	1.83	4.50	4.39	7.58	4.39	10.67	1.46
1.50	1.83	4.58	5.86	7.67	4.39	10.75	1.46
1.58	1.83	4.67	5.86	7.75	4.39	10.83	1.46
1.67	1.83	4.75	5.86	7.83	4.39	10.92	1.46
1.75	1.83	4.83	5.86	7.92	4.39	11.00	1.46
1.83	1.83	4.92	5.86	8.00	4.39	11.08	1.46
1.92	1.83	5.00	5.86	8.08	2.56	11.17	1.46
2.00	1.83	5.08	8.79	8.17	2.56	11.25	1.46
2.08	2.20	5.17	8.79	8.25	2.56	11.33	1.46
2.17	2.20	5.25	8.79	8.33	2.56	11.42	1.46
2.25	2.20	5.33	8.79	8.42	2.56	11.50	1.46
2.33	2.20	5.42	8.79	8.50	2.56	11.58	1.46
2.42	2.20	5.50	8.79	8.58	2.56	11.67	1.46
2.50	2.20	5.58	35.16	8.67	2.56	11.75	1.46
2.58	2.20	5.67	35.16	8.75	2.56	11.83	1.46
2.67	2.20	5.75	35.16	8.83	2.56	11.92	1.46
2.75	2.20	5.83	96.68	8.92	2.56	12.00	1.46
2.83	2.20	5.92	96.68	9.00	2.56		
2.92	2.20	6.00	96.68	9.08	2.56		
3.00	2.20	6.08	13.18	9.17	2.56		

CALIB	
NASHYD (0101)	Area (ha)= 0.68 Curve Number (CN)= 89.0
ID= 1 DT= 5.0 min	Ia (mm)= 4.50 # of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.15

Unit Hyd Qpeak (cms)= 0.173

PEAK FLOW (cms)= 0.114 (i)
TIME TO PEAK (hrs)= 6.083
RUNOFF VOLUME (mm)= 46.917
TOTAL RAINFALL (mm)= 73.240
RUNOFF COEFFICIENT = 0.641

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0102)	Area (ha)= 0.09
ID= 1 DT= 5.0 min	Total Imp(%)= 40.80 Dir. Conn.(%)= 40.80

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.04	0.05
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	3.00	5.00
Length	(m)=	24.77	17.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		96.68	47.64
over (min)		5.00	5.00
Storage Coeff. (min)=		0.81 (ii)	4.58 (ii)
Unit Hyd. Tpeak (min)=		5.00	5.00
Unit Hyd. peak (cms)=		0.34	0.23
			TOTALS
PEAK FLOW (cms)=		0.01	0.01	0.017 (iii)
TIME TO PEAK (hrs)=		6.08	6.08	6.08
RUNOFF VOLUME (mm)=		71.24	28.71	46.04
TOTAL RAINFALL (mm)=		73.24	73.24	73.24
RUNOFF COEFFICIENT =		0.97	0.39	0.63

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 73.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (0103)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3	ID1= 1 (0101):	0.68	0.114	6.08	46.92
	+ ID2= 2 (0102):	0.09	0.017	6.08	46.04
	ID = 3 (0103):	0.77	0.131	6.08	46.81

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

V V I SSSSS U U A L (v 6.2.2020)
V V I SS U U A A L
V V I SS U U AAAAA L
V V I SS U U A A L
VV I SSSSS UUUUU A A LLLLL

OOO TTTTT TTTTT H H Y Y M M OOO TM
O O T T H H Y Y MM MM O O
O O T T H H Y M M O O
OOO T T H H Y M M OOO

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***** D E T A I L E D O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat

Output filename:
C:\Users\dhordyk\AppData\Local\Civica\VH5\2f607adb-176c-49e7-bd01-798ce897c738\8230364d-223a-4564-8e39-1677359e6335\scen
Summary filename:
C:\Users\dhordyk\AppData\Local\Civica\VH5\2f607adb-176c-49e7-bd01-798ce897c738\8230364d-223a-4564-8e39-1677359e6335\scen

DATE: 04-23-2026 TIME: 04:12:23

USER:

COMMENTS: _____

****
** SIMULATION : 50yr 4hr 5min Chicago **
****

CHICAGO STORM	IDF curve parameters: A=1466.000
Ptotal= 59.99 mm	B= 6.550
	C= 0.832
	used in: INTENSITY = A / (t + B)^C

Duration of storm = 4.00 hrs
Storm time step = 5.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	3.06	1.00	16.22	2.00	9.69	3.00	4.21
0.08	3.26	1.08	26.24	2.08	8.71	3.08	4.03
0.17	3.50	1.17	63.87	2.17	7.91	3.17	3.86
0.25	3.78	1.25	191.45	2.25	7.25	3.25	3.71
0.33	4.11	1.33	82.81	2.33	6.70	3.33	3.57
0.42	4.51	1.42	45.02	2.42	6.22	3.42	3.44
0.50	5.01	1.50	30.13	2.50	5.82	3.50	3.32
0.58	5.63	1.58	22.42	2.58	5.46	3.58	3.21
0.67	6.45	1.67	17.78	2.67	5.15	3.67	3.11
0.75	7.57	1.75	14.71	2.75	4.87	3.75	3.01
0.83	9.18	1.83	12.54	2.83	4.63	3.83	2.92
0.92	11.71	1.92	10.93	2.92	4.41	3.92	2.84

```
--------------------------------------------------------------------------------
-------------------
| CALIB             |
| NASHYD   (  0101)|   Area    (ha)=   0.68   Curve Number   (CN)= 89.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   4.50   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.15

     Unit Hyd Qpeak  (cms)=   0.173

     PEAK FLOW       (cms)=   0.102 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=  35.237
     TOTAL RAINFALL   (mm)=  59.992
     RUNOFF COEFFICIENT   =   0.587

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
-------------------
| CALIB             |
| STANDHYD (  0102)|   Area    (ha)=   0.09
|ID= 1 DT= 5.0 min |   Total Imp(%)=  40.80   Dir. Conn.(%)=  40.80
-------------------

                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.04         0.05
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       3.00         5.00
     Length            (m)=      24.77        17.00
     Mannings n           =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     191.45        44.51
               over (min)        5.00         5.00
     Storage Coeff.  (min)=       0.61 (ii)    3.49 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.34         0.26
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.02         0.01          0.027 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.33           1.33
     RUNOFF VOLUME    (mm)=      57.99        20.30          35.65
     TOTAL RAINFALL   (mm)=      59.99        59.99          59.99
     RUNOFF COEFFICIENT   =       0.97         0.34           0.59

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  73.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
```

```
COMMENTS: _____

--------------------------------------------------------------------------------
-----------------------
  ************************************************
  ** SIMULATION : 5yr 12hr 5min SCS Type II     **
  ************************************************


-------------------
|    READ STORM    |    Filename: C:\Users\dhordyk\AppD
|                  |              ata\Local\Temp\
|                  |              68700332-0658-4465-99f6-0b1522ba8396\f1ecfee1
| Ptotal= 51.35 mm |   Comments: 5yr 12hr 5min SCS Type II
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.00    0.00 |  3.08    2.05 |  6.17    9.24 |  9.25    1.80
                0.08    1.28 |  3.17    2.05 |  6.25    9.24 |  9.33    1.80
                0.17    1.28 |  3.25    2.05 |  6.33    9.24 |  9.42    1.80
                0.25    1.28 |  3.33    2.05 |  6.42    9.24 |  9.50    1.80
                0.33    1.28 |  3.42    2.05 |  6.50    9.24 |  9.58    1.80
                0.42    1.28 |  3.50    2.05 |  6.58    4.11 |  9.67    1.80
                0.50    1.28 |  3.58    2.05 |  6.67    4.11 |  9.75    1.80
                0.58    1.28 |  3.67    2.05 |  6.75    4.11 |  9.83    1.80
                0.67    1.28 |  3.75    2.05 |  6.83    4.11 |  9.92    1.80
                0.75    1.28 |  3.83    2.05 |  6.92    4.11 | 10.00    1.80
                0.83    1.28 |  3.92    2.05 |  7.00    4.11 | 10.08    1.03
                0.92    1.28 |  4.00    2.05 |  7.08    3.08 | 10.17    1.03
                1.00    1.28 |  4.08    3.08 |  7.17    3.08 | 10.25    1.03
                1.08    1.28 |  4.17    3.08 |  7.25    3.08 | 10.33    1.03
                1.17    1.28 |  4.25    3.08 |  7.33    3.08 | 10.42    1.03
                1.25    1.28 |  4.33    3.08 |  7.42    3.08 | 10.50    1.03
                1.33    1.28 |  4.42    3.08 |  7.50    3.08 | 10.58    1.03
                1.42    1.28 |  4.50    3.08 |  7.58    3.08 | 10.67    1.03
                1.50    1.28 |  4.58    4.11 |  7.67    3.08 | 10.75    1.03
                1.58    1.28 |  4.67    4.11 |  7.75    3.08 | 10.83    1.03
                1.67    1.28 |  4.75    4.11 |  7.83    3.08 | 10.92    1.03
                1.75    1.28 |  4.83    4.11 |  7.92    3.08 | 11.00    1.03
                1.83    1.28 |  4.92    4.11 |  8.00    3.08 | 11.08    1.03
                1.92    1.28 |  5.00    4.11 |  8.08    1.80 | 11.17    1.03
                2.00    1.28 |  5.08    6.16 |  8.17    1.80 | 11.25    1.03
                2.08    1.54 |  5.17    6.16 |  8.25    1.80 | 11.33    1.03
                2.17    1.54 |  5.25    6.16 |  8.33    1.80 | 11.42    1.03
                2.25    1.54 |  5.33    6.16 |  8.42    1.80 | 11.50    1.03
                2.33    1.54 |  5.42    6.16 |  8.50    1.80 | 11.58    1.03
                2.42    1.54 |  5.50    6.16 |  8.58    1.80 | 11.67    1.03
                2.50    1.54 |  5.58   24.65 |  8.67    1.80 | 11.75    1.03
                2.58    1.54 |  5.67   24.65 |  8.75    1.80 | 11.83    1.03
                2.67    1.54 |  5.75   24.65 |  8.83    1.80 | 11.92    1.03
                2.75    1.54 |  5.83   67.78 |  8.92    1.80 | 12.00    1.03
                2.83    1.54 |  5.92   67.78 |  9.00    1.80 |
                2.92    1.54 |  6.00   67.78 |  9.08    1.80 |
                3.00    1.54 |  6.08    9.24 |  9.17    1.80 |
```

(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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-------------------
| ADD HYD  (  0103)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0101):     0.68    0.102     1.50    35.24
     + ID2= 2 (  0102):     0.09    0.027     1.33    35.65
       ================================================
       ID = 3 (  0103):     0.77    0.114     1.42    35.29

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
================================================================================
========================

       V    V   I    SSSSS  U   U    A    L              (v 6.2.2020)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat

  Output  filename:
C:\Users\dhordyk\AppData\Local\Civica\VH5\2f607adb-176c-49e7-bd01-798ce897c738\88fe
f151-250e-4ee9-9cb6-0c353d14246f\scen
  Summary filename:
C:\Users\dhordyk\AppData\Local\Civica\VH5\2f607adb-176c-49e7-bd01-798ce897c738\88fe
f151-250e-4ee9-9cb6-0c353d14246f\scen


DATE: 04-23-2026                          TIME: 04:12:24

USER:
```

```
--------------------------------------------------------------------------------

-------------------
| CALIB             |
| NASHYD   (  0101)|   Area    (ha)=   0.68   Curve Number   (CN)= 89.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   4.50   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.15

     Unit Hyd Qpeak  (cms)=   0.173

     PEAK FLOW       (cms)=   0.068 (i)
     TIME TO PEAK    (hrs)=   6.083
     RUNOFF VOLUME    (mm)=  27.890
     TOTAL RAINFALL   (mm)=  51.350
     RUNOFF COEFFICIENT   =   0.543

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
-------------------
| CALIB             |
| STANDHYD (  0102)|   Area    (ha)=   0.09
|ID= 1 DT= 5.0 min |   Total Imp(%)=  40.80   Dir. Conn.(%)=  40.80
-------------------

                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.04         0.05
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       3.00         5.00
     Length            (m)=      24.77        17.00
     Mannings n           =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=      67.78        25.61
               over (min)        5.00        10.00
     Storage Coeff.  (min)=       0.93 (ii)    5.28 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.34         0.16
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.01         0.00          0.010 (iii)
     TIME TO PEAK    (hrs)=       6.08         6.08           6.08
     RUNOFF VOLUME    (mm)=      49.35        15.31          29.16
     TOTAL RAINFALL   (mm)=      51.35        51.35          51.35
     RUNOFF COEFFICIENT   =       0.96         0.30           0.57
```

```
***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  73.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

-------------------
| ADD HYD  (  0103)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0101):     0.68   0.068     6.08    27.89
      + ID2= 2 (  0102):     0.09   0.010     6.08    29.16
        ================================================
        ID = 3 (  0103):     0.77   0.078     6.08    28.04

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
================================================================================
======================

       V    V   I    SSSSS  U   U    A    L             (v 6.2.2020)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat

  Output  filename:
C:\Users\dhordyk\AppData\Local\Civica\VH5\2f607adb-176c-49e7-bd01-798ce897c738\9ffa
8d40-62da-4c2f-b145-c74cdecdace8\scen
  Summary filename:
C:\Users\dhordyk\AppData\Local\Civica\VH5\2f607adb-176c-49e7-bd01-798ce897c738\9ffa
8d40-62da-4c2f-b145-c74cdecdace8\scen

DATE: 04-23-2026                          TIME: 04:12:23

USER:


COMMENTS: _____________________________________________________

--------------------------------------------------------------------------------
----------------------
  ***********************************************
  ** SIMULATION : 5yr 4hr 5min Chicago          **
  ***********************************************

--------------------
| CHICAGO STORM    |    IDF curve parameters: A= 950.000
| Ptotal= 41.50 mm |                          B=   6.750
--------------------                          C=   0.820
                       used in:   INTENSITY =  A / (t + B)^C

                       Duration of storm  =  4.00 hrs
                       Storm time step    =  5.00 min
                       Time to peak ratio =  0.33

     TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
      hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
     0.00    2.25 |  1.00   11.49 |  2.00    6.95 |  3.00    3.08
     0.08    2.40 |  1.08   18.36 |  2.08    6.26 |  3.08    2.95
     0.17    2.57 |  1.17   43.55 |  2.17    5.70 |  3.17    2.83
     0.25    2.77 |  1.25  125.98 |  2.25    5.24 |  3.25    2.72
     0.33    3.01 |  1.33   56.09 |  2.33    4.85 |  3.33    2.62
     0.42    3.29 |  1.42   31.06 |  2.42    4.51 |  3.42    2.53
     0.50    3.65 |  1.50   21.01 |  2.50    4.22 |  3.50    2.44
     0.58    4.09 |  1.58   15.76 |  2.58    3.97 |  3.58    2.36
     0.67    4.67 |  1.67   12.57 |  2.67    3.75 |  3.67    2.29
     0.75    5.46 |  1.75   10.45 |  2.75    3.55 |  3.75    2.22
     0.83    6.60 |  1.83    8.94 |  2.83    3.38 |  3.83    2.15
     0.92    8.37 |  1.92    7.82 |  2.92    3.22 |  3.92    2.09


--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0101)|   Area    (ha)=   0.68   Curve Number   (CN)= 89.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   4.50   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.15

     Unit Hyd Qpeak  (cms)=   0.173

     PEAK FLOW       (cms)=   0.053 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=  19.905
     TOTAL RAINFALL   (mm)=  41.505
     RUNOFF COEFFICIENT   =   0.480

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0102)|   Area    (ha)=   0.09
|ID= 1 DT= 5.0 min |   Total Imp(%)=  40.80   Dir. Conn.(%)=  40.80
--------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.04         0.05
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       3.00         5.00
     Length            (m)=      24.77        17.00
     Mannings n           =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     125.98        20.16
               over (min)        5.00         5.00
     Storage Coeff.  (min)=       0.73 (ii)    4.12 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.34         0.24
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.01         0.00          0.016 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.33           1.33
     RUNOFF VOLUME    (mm)=      39.50        10.22          22.14
     TOTAL RAINFALL   (mm)=      41.50        41.50          41.50
     RUNOFF COEFFICIENT   =       0.95         0.25           0.53

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  73.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

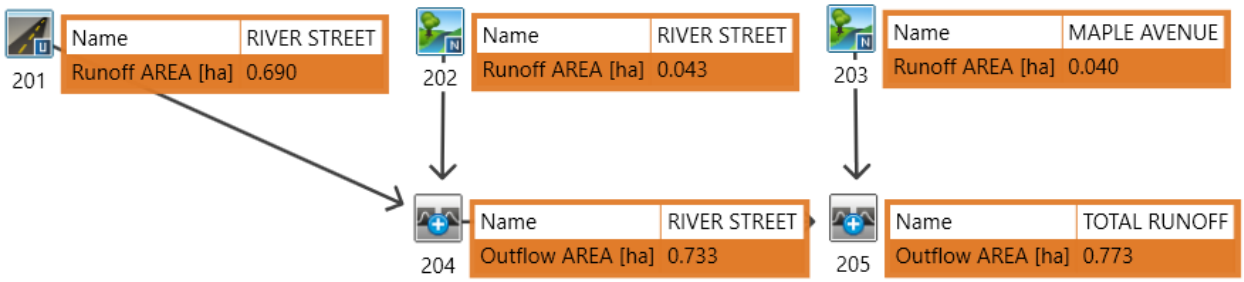
--------------------------------------------------------------------------------

-------------------
| ADD HYD  (  0103)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0101):     0.68   0.053     1.50    19.90
      + ID2= 2 (  0102):     0.09   0.016     1.33    22.14
        ================================================
        ID = 3 (  0103):     0.77   0.058     1.50    20.17

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
```

VISUAL OTTHYMO HYDROLOGICAL MODEL

POST-DEVELOPMENT



```
================================================================================
=======================

       V    V   I    SSSSS  U   U    A    L             (v 6.2.2020)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat

  Output  filename:
C:\Users\dhordyk\AppData\Local\Civica\VH5\2f607adb-176c-49e7-bd01-798ce897c738\c6d0
aaff-8c8e-4f57-a841-0f609f5e0f04\scen
  Summary filename:
C:\Users\dhordyk\AppData\Local\Civica\VH5\2f607adb-176c-49e7-bd01-798ce897c738\c6d0
aaff-8c8e-4f57-a841-0f609f5e0f04\scen


DATE: 04-23-2026                          TIME: 04:12:28

USER:


COMMENTS: _____________________________________________________________


--------------------------------------------------------------------------------
------------------------
  ************************************************
  ** SIMULATION : 100yr 12hr 5min SCS Type II   **
  ************************************************


-------------------
|    READ STORM    |    Filename: C:\Users\dhordyk\AppD
|                  |              ata\Local\Temp\
```

```
|                  |              37f28786-36da-4bc7-9c49-8b7e99735d33\52617754
| Ptotal= 78.49 mm |    Comments: 100yr 12hr 5min SCS Type II
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.00    0.00 |  3.08    3.14 |  6.17   14.13 |  9.25    2.75
                0.08    1.96 |  3.17    3.14 |  6.25   14.13 |  9.33    2.75
                0.17    1.96 |  3.25    3.14 |  6.33   14.13 |  9.42    2.75
                0.25    1.96 |  3.33    3.14 |  6.42   14.13 |  9.50    2.75
                0.33    1.96 |  3.42    3.14 |  6.50   14.13 |  9.58    2.75
                0.42    1.96 |  3.50    3.14 |  6.58    6.28 |  9.67    2.75
                0.50    1.96 |  3.58    3.14 |  6.67    6.28 |  9.75    2.75
                0.58    1.96 |  3.67    3.14 |  6.75    6.28 |  9.83    2.75
                0.67    1.96 |  3.75    3.14 |  6.83    6.28 |  9.92    2.75
                0.75    1.96 |  3.83    3.14 |  6.92    6.28 | 10.00    2.75
                0.83    1.96 |  3.92    3.14 |  7.00    6.28 | 10.08    1.57
                0.92    1.96 |  4.00    3.14 |  7.08    4.71 | 10.17    1.57
                1.00    1.96 |  4.08    4.71 |  7.17    4.71 | 10.25    1.57
                1.08    1.96 |  4.17    4.71 |  7.25    4.71 | 10.33    1.57
                1.17    1.96 |  4.25    4.71 |  7.33    4.71 | 10.42    1.57
                1.25    1.96 |  4.33    4.71 |  7.42    4.71 | 10.50    1.57
                1.33    1.96 |  4.42    4.71 |  7.50    4.71 | 10.58    1.57
                1.42    1.96 |  4.50    4.71 |  7.58    4.71 | 10.67    1.57
                1.50    1.96 |  4.58    6.28 |  7.67    4.71 | 10.75    1.57
                1.58    1.96 |  4.67    6.28 |  7.75    4.71 | 10.83    1.57
                1.67    1.96 |  4.75    6.28 |  7.83    4.71 | 10.92    1.57
                1.75    1.96 |  4.83    6.28 |  7.92    4.71 | 11.00    1.57
                1.83    1.96 |  4.92    6.28 |  8.00    4.71 | 11.08    1.57
                1.92    1.96 |  5.00    6.28 |  8.08    2.75 | 11.17    1.57
                2.00    1.96 |  5.08    9.42 |  8.17    2.75 | 11.25    1.57
                2.08    2.35 |  5.17    9.42 |  8.25    2.75 | 11.33    1.57
                2.17    2.35 |  5.25    9.42 |  8.33    2.75 | 11.42    1.57
                2.25    2.35 |  5.33    9.42 |  8.42    2.75 | 11.50    1.57
                2.33    2.35 |  5.42    9.42 |  8.50    2.75 | 11.58    1.57
                2.42    2.35 |  5.50    9.42 |  8.58    2.75 | 11.67    1.57
                2.50    2.35 |  5.58   37.68 |  8.67    2.75 | 11.75    1.57
                2.58    2.35 |  5.67   37.68 |  8.75    2.75 | 11.83    1.57
                2.67    2.35 |  5.75   37.68 |  8.83    2.75 | 11.92    1.57
                2.75    2.35 |  5.83  103.61 |  8.92    2.75 | 12.00    1.57
                2.83    2.35 |  5.92  103.61 |  9.00    2.75 |
                2.92    2.35 |  6.00  103.61 |  9.08    2.75 |
                3.00    2.35 |  6.08   14.13 |  9.17    2.75 |

--------------------------------------------------------------------------------

--------------------
| CALIB            |
| NASHYD   (  0203)|   Area    (ha)=   0.04   Curve Number   (CN)= 77.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   4.60   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.08
```

```
     Unit Hyd Qpeak  (cms)=   0.020

     PEAK FLOW       (cms)=   0.006 (i)
     TIME TO PEAK    (hrs)=   6.083
     RUNOFF VOLUME    (mm)=  33.893
     TOTAL RAINFALL   (mm)=  78.490
     RUNOFF COEFFICIENT   =   0.432

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0202)|   Area    (ha)=   0.04   Curve Number   (CN)= 76.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   4.70   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.04

     Unit Hyd Qpeak  (cms)=   0.047

     PEAK FLOW       (cms)=   0.004 (i)
     TIME TO PEAK    (hrs)=   6.083
     RUNOFF VOLUME    (mm)=  16.887
     TOTAL RAINFALL   (mm)=  78.490
     RUNOFF COEFFICIENT   =   0.215

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0201)|   Area    (ha)=   0.69
|ID= 1 DT= 5.0 min |   Total Imp(%)=  92.00   Dir. Conn.(%)=  92.00
--------------------

                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      0.63         0.06
     Dep. Storage     (mm)=      2.00         5.00
     Average Slope     (%)=      2.00         5.00
     Length            (m)=     67.82        20.00
     Mannings n            =     0.013        0.250

     Max.Eff.Inten.(mm/hr)=    103.61        53.42
                 over (min)       5.00         5.00
     Storage Coeff.  (min)=      1.62 (ii)    2.93 (ii)
     Unit Hyd. Tpeak (min)=      5.00         5.00
     Unit Hyd. peak  (cms)=      0.32         0.28
                                                      *TOTALS*
     PEAK FLOW       (cms)=      0.18         0.01         0.191 (iii)
     TIME TO PEAK    (hrs)=      6.08         6.08          6.08
     RUNOFF VOLUME    (mm)=     76.49        32.26         72.95
```

```
     TOTAL RAINFALL   (mm)=     78.49        78.49         78.49
     RUNOFF COEFFICIENT   =      0.97         0.41          0.93

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  73.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

-------------------
| ADD HYD  (  0204)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0201):     0.69   0.191     6.08    72.95
     + ID2= 2 (  0202):     0.04   0.004     6.08    16.89
       ==========================================================
       ID = 3 (  0204):     0.73   0.195     6.08    69.66

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

-------------------
| ADD HYD  (  0205)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0203):     0.04   0.006     6.08    33.89
     + ID2= 2 (  0204):     0.73   0.195     6.08    69.66
       ==========================================================
       ID = 3 (  0205):     0.77   0.201     6.08    67.81

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
================================================================================
=======================

       V    V   I    SSSSS  U   U    A    L             (v 6.2.2020)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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```

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***** D E T A I L E D O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat

Output filename:
C:\Users\dhordyk\AppData\Local\Civica\VH5\2f607adb-176c-49e7-bd01-798ce897c738\bad316ed-5732-42fc-b1c0-0730b162ce29\scen
Summary filename:
C:\Users\dhordyk\AppData\Local\Civica\VH5\2f607adb-176c-49e7-bd01-798ce897c738\bad316ed-5732-42fc-b1c0-0730b162ce29\scen

DATE: 04-23-2026 TIME: 04:12:28

USER:

COMMENTS: _____

** SIMULATION : 100yr 4hr 5min Chicago **

| CHICAGO STORM | IDF curve parameters: A=1499.000
| Ptotal= 63.91 mm | B= 5.810
C= 0.825
used in: INTENSITY = A / (t + B)^C

Duration of storm = 4.00 hrs
Storm time step = 5.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	3.33	1.00	16.95	2.00	10.25	3.00	4.54
0.08	3.55	1.08	27.22	2.08	9.23	3.08	4.35
0.17	3.80	1.17	66.64	2.17	8.41	3.17	4.18
0.25	4.09	1.25	210.33	2.25	7.73	3.25	4.02
0.33	4.44	1.33	86.75	2.33	7.15	3.33	3.87
0.42	4.87	1.42	46.62	2.42	6.66	3.42	3.73
0.50	5.38	1.50	31.21	2.50	6.23	3.50	3.61
0.58	6.04	1.58	23.30	2.58	5.86	3.58	3.49
0.67	6.89	1.67	18.55	2.67	5.54	3.67	3.38
0.75	8.06	1.75	15.40	2.75	5.25	3.75	3.28
0.83	9.73	1.83	13.18	2.83	4.99	3.83	3.18
0.92	12.33	1.92	11.52	2.92	4.76	3.92	3.10

| CALIB | Area (ha)= 0.04 Curve Number (CN)= 77.0
| NASHYD (0203) | Ia (mm)= 4.60 # of Linear Res.(N)= 3.00
|ID= 1 DT= 5.0 min | U.H. Tp(hrs)= 0.08

Unit Hyd Qpeak (cms)= 0.020

PEAK FLOW (cms)= 0.005 (i)
TIME TO PEAK (hrs)= 1.333
RUNOFF VOLUME (mm)= 24.192
TOTAL RAINFALL (mm)= 63.912
RUNOFF COEFFICIENT = 0.379

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

| CALIB | Area (ha)= 0.04 Curve Number (CN)= 76.0
| NASHYD (0202) | Ia (mm)= 4.70 # of Linear Res.(N)= 3.00
|ID= 1 DT= 5.0 min | U.H. Tp(hrs)= 0.04

Unit Hyd Qpeak (cms)= 0.047

PEAK FLOW (cms)= 0.004 (i)
TIME TO PEAK (hrs)= 1.333
RUNOFF VOLUME (mm)= 12.009
TOTAL RAINFALL (mm)= 63.912
RUNOFF COEFFICIENT = 0.188

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

| CALIB | Area (ha)= 0.69
| STANDHYD (0201) | Total Imp(%)= 92.00 Dir. Conn.(%)= 92.00
|ID= 1 DT= 5.0 min |

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.63	0.06
Dep. Storage (mm)=	2.00	5.00
Average Slope (%)=	2.00	5.00
Length (m)=	67.82	20.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	210.33	51.01
over (min)	5.00	5.00
Storage Coeff. (min)=	1.22 (ii)	2.21 (ii)
Unit Hyd. Tpeak (min)=	5.00	5.00
Unit Hyd. peak (cms)=	0.33	0.30
		TOTALS
PEAK FLOW (cms)=	0.37	0.01	0.376 (iii)
TIME TO PEAK (hrs)=	1.33	1.33	1.33
RUNOFF VOLUME (mm)=	61.91	22.71	58.78
TOTAL RAINFALL (mm)=	63.91	63.91	63.91
RUNOFF COEFFICIENT =	0.97	0.36	0.92

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 73.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (0204)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (0201):	0.69	0.376	1.33	58.78
+	ID2= 2 (0202):	0.04	0.004	1.33	12.01
	ID = 3 (0204):	0.73	0.380	1.33	56.03

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0205)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (0203):	0.04	0.005	1.33	24.19
+	ID2= 2 (0204):	0.73	0.380	1.33	56.03
	ID = 3 (0205):	0.77	0.385	1.33	54.38

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

V V I SSSSS U U A L (v 6.2.2020)
V V I SS U U A A L
V V I SS U U AAAAA L
V V I SS U U A A L
VV I SSSSS UUUUU A A LLLLL

OOO TTTTT TTTTT H H Y Y M M OOO TM
O O T T H H Y Y MM MM O O
O O T T H H Y M M O O
OOO T T H H Y M M OOO

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***** D E T A I L E D O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat

Output filename:
C:\Users\dhordyk\AppData\Local\Civica\VH5\2f607adb-176c-49e7-bd01-798ce897c738\ea0135f4-f223-4683-9de6-d32c4aa04463\scen
Summary filename:
C:\Users\dhordyk\AppData\Local\Civica\VH5\2f607adb-176c-49e7-bd01-798ce897c738\ea0135f4-f223-4683-9de6-d32c4aa04463\scen

DATE: 04-23-2026 TIME: 04:12:28

USER:

COMMENTS: _____

** SIMULATION : 10yr 12hr 5min SCS Type II **

| READ STORM | Filename: C:\Users\dhordyk\AppData\Local\Temp\

	37f28786-36da-4bc7-9c49-8b7e99735d33\d5194742
Ptotal= 56.68 mm	Comments: 10yr 12hr 5min SCS Type II

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	0.00	3.08	2.27	6.17	10.20	9.25	1.98
0.08	1.42	3.17	2.27	6.25	10.20	9.33	1.98
0.17	1.42	3.25	2.27	6.33	10.20	9.42	1.98
0.25	1.42	3.33	2.27	6.42	10.20	9.50	1.98
0.33	1.42	3.42	2.27	6.50	10.20	9.58	1.98
0.42	1.42	3.50	2.27	6.58	4.53	9.67	1.98
0.50	1.42	3.58	2.27	6.67	4.53	9.75	1.98
0.58	1.42	3.67	2.27	6.75	4.53	9.83	1.98
0.67	1.42	3.75	2.27	6.83	4.53	9.92	1.98
0.75	1.42	3.83	2.27	6.92	4.53	10.00	1.98
0.83	1.42	3.92	2.27	7.00	4.53	10.08	1.13
0.92	1.42	4.00	2.27	7.08	3.40	10.17	1.13
1.00	1.42	4.08	3.40	7.17	3.40	10.25	1.13
1.08	1.42	4.17	3.40	7.25	3.40	10.33	1.13
1.17	1.42	4.25	3.40	7.33	3.40	10.42	1.13
1.25	1.42	4.33	3.40	7.42	3.40	10.50	1.13
1.33	1.42	4.42	3.40	7.50	3.40	10.58	1.13
1.42	1.42	4.50	3.40	7.58	3.40	10.67	1.13
1.50	1.42	4.58	4.53	7.67	3.40	10.75	1.13
1.58	1.42	4.67	4.53	7.75	3.40	10.83	1.13
1.67	1.42	4.75	4.53	7.83	3.40	10.92	1.13
1.75	1.42	4.83	4.53	7.92	3.40	11.00	1.13
1.83	1.42	4.92	4.53	8.00	3.40	11.08	1.13
1.92	1.42	5.00	4.53	8.08	1.98	11.17	1.13
2.00	1.42	5.08	6.80	8.17	1.98	11.25	1.13
2.08	1.70	5.17	6.80	8.25	1.98	11.33	1.13
2.17	1.70	5.25	6.80	8.33	1.98	11.42	1.13
2.25	1.70	5.33	6.80	8.42	1.98	11.50	1.13
2.33	1.70	5.42	6.80	8.50	1.98	11.58	1.13
2.42	1.70	5.50	6.80	8.58	1.98	11.67	1.13
2.50	1.70	5.58	27.21	8.67	1.98	11.75	1.13
2.58	1.70	5.67	27.21	8.75	1.98	11.83	1.13
2.67	1.70	5.75	27.21	8.83	1.98	11.92	1.13
2.75	1.70	5.83	74.82	8.92	1.98	12.00	1.13
2.83	1.70	5.92	74.82	9.00	1.98		
2.92	1.70	6.00	74.82	9.08	1.98		
3.00	1.70	6.08	10.20	9.17	1.98		

CALIB	
NASHYD (0203)	Area (ha)= 0.04 Curve Number (CN)= 77.0
ID= 1 DT= 5.0 min	Ia (mm)= 4.60 # of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.08

Unit Hyd Qpeak (cms)= 0.020

PEAK FLOW (cms)= 0.004 (i)
TIME TO PEAK (hrs)= 6.083
RUNOFF VOLUME (mm)= 19.703
TOTAL RAINFALL (mm)= 56.680
RUNOFF COEFFICIENT = 0.348

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
NASHYD (0202)	Area (ha)= 0.04 Curve Number (CN)= 76.0
ID= 1 DT= 5.0 min	Ia (mm)= 4.70 # of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.04

Unit Hyd Qpeak (cms)= 0.047

PEAK FLOW (cms)= 0.002 (i)
TIME TO PEAK (hrs)= 6.083
RUNOFF VOLUME (mm)= 9.762
TOTAL RAINFALL (mm)= 56.680
RUNOFF COEFFICIENT = 0.172

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0201)	Area (ha)= 0.69
ID= 1 DT= 5.0 min	Total Imp(%)= 92.00 Dir. Conn.(%)= 92.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.63	0.06
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	2.00	5.00
Length	(m)=	67.82	20.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		74.82	30.62
over (min)		5.00	5.00
Storage Coeff. (min)=		1.85 (ii)	3.34 (ii)
Unit Hyd. Tpeak (min)=		5.00	5.00
Unit Hyd. peak (cms)=		0.32	0.26

		TOTALS
PEAK FLOW	(cms)=	0.13 (iii)
TIME TO PEAK	(hrs)=	6.08
RUNOFF VOLUME	(mm)=	51.77
TOTAL RAINFALL	(mm)=	56.68
RUNOFF COEFFICIENT	=	0.96

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 73.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (0204)					
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0201):	0.69	0.137	6.08	51.77
+ ID2= 2 (0202):	0.04	0.002	6.08	9.76
ID = 3 (0204):	0.73	0.139	6.08	49.31

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0205)					
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0203):	0.04	0.004	6.08	19.70
+ ID2= 2 (0204):	0.73	0.139	6.08	49.31
ID = 3 (0205):	0.77	0.142	6.08	47.78

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

V V I SSSSS U U A L (v 6.2.2020)
V V I SS U U A A L
V V I SS U U AAAAA L
V V I SS U U A A L
VV I SSSSS UUUUU A A LLLLL

OOO TTTTT TTTTT H H Y Y M M OOO TM
O O T T H H Y Y MM MM O O
O O T T H H Y M M O O
OOO T T H H Y M M OOO
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***** D E T A I L E D O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat

Output filename:
C:\Users\dhordyk\AppData\Local\Civica\VH5\2f607adb-176c-49e7-bd01-798ce897c738\2b8d0d13-f03f-4c29-bfca-2f3824a0ab12\scen
Summary filename:
C:\Users\dhordyk\AppData\Local\Civica\VH5\2f607adb-176c-49e7-bd01-798ce897c738\2b8d0d13-f03f-4c29-bfca-2f3824a0ab12\scen

DATE: 04-23-2026 TIME: 04:12:27

USER:

COMMENTS: _____

CHICAGO STORM	IDF curve parameters: A=1221.000
Ptotal= 46.90 mm	B= 7.380
	C= 0.843

used in: INTENSITY = A / (t + B)^C

Duration of storm = 4.00 hrs
Storm time step = 5.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	2.29	1.00	12.88	2.00	7.57	3.00	3.19
0.08	2.45	1.08	21.06	2.08	6.78	3.08	3.05
0.17	2.64	1.17	51.15	2.17	6.14	3.17	2.92
0.25	2.86	1.25	146.40	2.25	5.61	3.25	2.80
0.33	3.12	1.33	66.09	2.33	5.16	3.33	2.69
0.42	3.43	1.42	36.28	2.42	4.79	3.42	2.59

```
                0.50    3.82 |  1.50   24.24 |  2.50    4.46 |  3.50    2.50
                0.58    4.32 |  1.58   17.95 |  2.58    4.18 |  3.58    2.41
                0.67    4.97 |  1.67   14.16 |  2.67    3.94 |  3.67    2.33
                0.75    5.86 |  1.75   11.65 |  2.75    3.72 |  3.75    2.26
                0.83    7.16 |  1.83    9.88 |  2.83    3.52 |  3.83    2.19
                0.92    9.21 |  1.92    8.57 |  2.92    3.35 |  3.92    2.13


--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0203)|   Area    (ha)=   0.04   Curve Number   (CN)= 77.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   4.60   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.08

     Unit Hyd Qpeak  (cms)=   0.020

     PEAK FLOW       (cms)=   0.003 (i)
     TIME TO PEAK    (hrs)=   1.417
     RUNOFF VOLUME    (mm)=  14.073
     TOTAL RAINFALL   (mm)=  46.896
     RUNOFF COEFFICIENT   =   0.300

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0202)|   Area    (ha)=   0.04   Curve Number   (CN)= 76.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   4.70   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.04

     Unit Hyd Qpeak  (cms)=   0.047

     PEAK FLOW       (cms)=   0.002 (i)
     TIME TO PEAK    (hrs)=   1.333
     RUNOFF VOLUME    (mm)=   6.946
     TOTAL RAINFALL   (mm)=  46.896
     RUNOFF COEFFICIENT   =   0.148

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0201)|   Area    (ha)=   0.69
|ID= 1 DT= 5.0 min |   Total Imp(%)=  92.00   Dir. Conn.(%)=  92.00
--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      0.63         0.06
```

```
     Dep. Storage     (mm)=      2.00         5.00
     Average Slope     (%)=      2.00         5.00
     Length            (m)=     67.82        20.00
     Mannings n           =     0.013        0.250

     Max.Eff.Inten.(mm/hr)=    146.40        27.14
                 over (min)        5.00         5.00
     Storage Coeff.  (min)=      1.41 (ii)    2.55 (ii)
     Unit Hyd. Tpeak (min)=      5.00         5.00
     Unit Hyd. peak  (cms)=      0.33         0.29
                                                        *TOTALS*
     PEAK FLOW       (cms)=      0.25         0.00          0.258 (iii)
     TIME TO PEAK    (hrs)=      1.33         1.33           1.33
     RUNOFF VOLUME    (mm)=     44.90        12.92          42.34
     TOTAL RAINFALL   (mm)=     46.90        46.90          46.90
     RUNOFF COEFFICIENT   =      0.96         0.28           0.90

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

      (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  73.0    Ia = Dep. Storage  (Above)
     (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
          THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0204)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0201):     0.69   0.258     1.33    42.34
     + ID2= 2 (  0202):     0.04   0.002     1.33     6.95
       ================================================
       ID = 3 (  0204):     0.73   0.260     1.33    40.26

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0205)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0203):     0.04   0.003     1.42    14.07
     + ID2= 2 (  0204):     0.73   0.260     1.33    40.26
       ================================================
       ID = 3 (  0205):     0.77   0.262     1.33    38.91

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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================================================================================
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       V    V   I    SSSSS  U   U    A    L              (v 6.2.2020)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat

  Output  filename:
C:\Users\dhordyk\AppData\Local\Civica\VH5\2f607adb-176c-49e7-bd01-798ce897c738\85b6
566f-ba1c-414c-9cf7-8546670491c9\scen
  Summary filename:
C:\Users\dhordyk\AppData\Local\Civica\VH5\2f607adb-176c-49e7-bd01-798ce897c738\85b6
566f-ba1c-414c-9cf7-8546670491c9\scen


DATE: 04-23-2026                          TIME: 04:12:28

USER:



COMMENTS: _____


--------------------------------------------------------------------------------
------------------------
  ************************************************
  ** SIMULATION : 25yr 12hr 5min SCS Type II    **
  ************************************************


--------------------
|    READ STORM    |    Filename: C:\Users\dhordyk\AppD
|                  |              ata\Local\Temp\
```

```
|                  |              37f28786-36da-4bc7-9c49-8b7e99735d33\2fd4d62c
| Ptotal= 65.23 mm |    Comments: 25yr 12hr 5min SCS Type II
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.00    0.00 |  3.08    2.61 |  6.17   11.74 |  9.25    2.28
                0.08    1.63 |  3.17    2.61 |  6.25   11.74 |  9.33    2.28
                0.17    1.63 |  3.25    2.61 |  6.33   11.74 |  9.42    2.28
                0.25    1.63 |  3.33    2.61 |  6.42   11.74 |  9.50    2.28
                0.33    1.63 |  3.42    2.61 |  6.50   11.74 |  9.58    2.28
                0.42    1.63 |  3.50    2.61 |  6.58    5.22 |  9.67    2.28
                0.50    1.63 |  3.58    2.61 |  6.67    5.22 |  9.75    2.28
                0.58    1.63 |  3.67    2.61 |  6.75    5.22 |  9.83    2.28
                0.67    1.63 |  3.75    2.61 |  6.83    5.22 |  9.92    2.28
                0.75    1.63 |  3.83    2.61 |  6.92    5.22 | 10.00    2.28
                0.83    1.63 |  3.92    2.61 |  7.00    5.22 | 10.08    1.30
                0.92    1.63 |  4.00    2.61 |  7.08    3.91 | 10.17    1.30
                1.00    1.63 |  4.08    3.91 |  7.17    3.91 | 10.25    1.30
                1.08    1.63 |  4.17    3.91 |  7.25    3.91 | 10.33    1.30
                1.17    1.63 |  4.25    3.91 |  7.33    3.91 | 10.42    1.30
                1.25    1.63 |  4.33    3.91 |  7.42    3.91 | 10.50    1.30
                1.33    1.63 |  4.42    3.91 |  7.50    3.91 | 10.58    1.30
                1.42    1.63 |  4.50    3.91 |  7.58    3.91 | 10.67    1.30
                1.50    1.63 |  4.58    5.22 |  7.67    3.91 | 10.75    1.30
                1.58    1.63 |  4.67    5.22 |  7.75    3.91 | 10.83    1.30
                1.67    1.63 |  4.75    5.22 |  7.83    3.91 | 10.92    1.30
                1.75    1.63 |  4.83    5.22 |  7.92    3.91 | 11.00    1.30
                1.83    1.63 |  4.92    5.22 |  8.00    3.91 | 11.08    1.30
                1.92    1.63 |  5.00    5.22 |  8.08    2.28 | 11.17    1.30
                2.00    1.63 |  5.08    7.83 |  8.17    2.28 | 11.25    1.30
                2.08    1.96 |  5.17    7.83 |  8.25    2.28 | 11.33    1.30
                2.17    1.96 |  5.25    7.83 |  8.33    2.28 | 11.42    1.30
                2.25    1.96 |  5.33    7.83 |  8.42    2.28 | 11.50    1.30
                2.33    1.96 |  5.42    7.83 |  8.50    2.28 | 11.58    1.30
                2.42    1.96 |  5.50    7.83 |  8.58    2.28 | 11.67    1.30
                2.50    1.96 |  5.58   31.31 |  8.67    2.28 | 11.75    1.30
                2.58    1.96 |  5.67   31.31 |  8.75    2.28 | 11.83    1.30
                2.67    1.96 |  5.75   31.31 |  8.83    2.28 | 11.92    1.30
                2.75    1.96 |  5.83   86.10 |  8.92    2.28 | 12.00    1.30
                2.83    1.96 |  5.92   86.10 |  9.00    2.28 |
                2.92    1.96 |  6.00   86.10 |  9.08    2.28 |
                3.00    1.96 |  6.08   11.74 |  9.17    2.28 |

--------------------------------------------------------------------------------

--------------------
| CALIB            |
| NASHYD   (  0203)|   Area    (ha)=   0.04   Curve Number   (CN)= 77.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   4.60   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.08
```

```
     Unit Hyd Qpeak  (cms)=   0.020

     PEAK FLOW       (cms)=   0.005 (i)
     TIME TO PEAK    (hrs)=   6.083
     RUNOFF VOLUME    (mm)=  25.031
     TOTAL RAINFALL   (mm)=  65.230
     RUNOFF COEFFICIENT   =   0.384

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0202)|   Area    (ha)=   0.04   Curve Number   (CN)= 76.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   4.70   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.04

     Unit Hyd Qpeak  (cms)=   0.047

     PEAK FLOW       (cms)=   0.003 (i)
     TIME TO PEAK    (hrs)=   6.083
     RUNOFF VOLUME    (mm)=  12.434
     TOTAL RAINFALL   (mm)=  65.230
     RUNOFF COEFFICIENT   =   0.191

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0201)|   Area    (ha)=   0.69
|ID= 1 DT= 5.0 min |   Total Imp(%)=  92.00   Dir. Conn.(%)=  92.00
--------------------

                         IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      0.63         0.06
     Dep. Storage     (mm)=      2.00         5.00
     Average Slope     (%)=      2.00         5.00
     Length            (m)=     67.82        20.00
     Mannings n           =     0.013        0.250

     Max.Eff.Inten.(mm/hr)=     86.10        39.16
               over (min)        5.00         5.00
     Storage Coeff.  (min)=      1.75 (ii)    3.16 (ii)
     Unit Hyd. Tpeak (min)=      5.00         5.00
     Unit Hyd. peak  (cms)=      0.32         0.27
                                                  *TOTALS*
     PEAK FLOW       (cms)=      0.15         0.01         0.158 (iii)
     TIME TO PEAK    (hrs)=      6.08         6.08          6.08
     RUNOFF VOLUME    (mm)=     63.23        23.53         60.05
     TOTAL RAINFALL   (mm)=     65.23        65.23         65.23
     RUNOFF COEFFICIENT   =      0.97         0.36          0.92

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

      (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  73.0    Ia = Dep. Storage  (Above)
     (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
          THAN THE STORAGE COEFFICIENT.
    (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0204)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0201):     0.69   0.158     6.08    60.05
     + ID2= 2 (  0202):     0.04   0.003     6.08    12.43
       ================================================
       ID = 3 (  0204):     0.73   0.161     6.08    57.26

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0205)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0203):     0.04   0.005     6.08    25.03
     + ID2= 2 (  0204):     0.73   0.161     6.08    57.26
       ================================================
       ID = 3 (  0205):     0.77   0.165     6.08    55.59

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
================================================================================
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       V    V   I    SSSSS  U   U    A    L              (v 6.2.2020)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat

  Output  filename:
C:\Users\dhordyk\AppData\Local\Civica\VH5\2f607adb-176c-49e7-bd01-798ce897c738\7d58
a435-d2d6-4550-834c-1d7010894c2f\scen
  Summary filename:
C:\Users\dhordyk\AppData\Local\Civica\VH5\2f607adb-176c-49e7-bd01-798ce897c738\7d58
a435-d2d6-4550-834c-1d7010894c2f\scen


DATE: 04-23-2026                          TIME: 04:12:28

USER:


COMMENTS: _____


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  ************************************************
  ** SIMULATION : 25yr 4hr 5min Chicago         **
  ************************************************

--------------------
| CHICAGO STORM    |    IDF curve parameters: A=1452.000
| Ptotal= 54.27 mm |                          B=   7.300
--------------------                          C=   0.848
                       used in:   INTENSITY =  A / (t + B)^C

                       Duration of storm  =  4.00 hrs
                       Storm time step    =  5.00 min
                       Time to peak ratio =  0.33

                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.00    2.58 |  1.00   14.76 |  2.00    8.62 |  3.00    3.60
                0.08    2.76 |  1.08   24.26 |  2.08    7.71 |  3.08    3.44
                0.17    2.97 |  1.17   59.58 |  2.17    6.97 |  3.17    3.29
                0.25    3.22 |  1.25  172.87 |  2.25    6.37 |  3.25    3.16
                0.33    3.52 |  1.33   77.18 |  2.33    5.86 |  3.33    3.03
                0.42    3.88 |  1.42   42.06 |  2.42    5.43 |  3.42    2.92
                0.50    4.32 |  1.50   27.96 |  2.50    5.06 |  3.50    2.82
                0.58    4.89 |  1.58   20.63 |  2.58    4.73 |  3.58    2.72
                0.67    5.63 |  1.67   16.23 |  2.67    4.45 |  3.67    2.63
                0.75    6.66 |  1.75   13.33 |  2.75    4.20 |  3.75    2.54
                0.83    8.15 |  1.83   11.29 |  2.83    3.98 |  3.83    2.47
                0.92   10.52 |  1.92    9.78 |  2.92    3.78 |  3.92    2.39


--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0203)|   Area    (ha)=   0.04   Curve Number   (CN)= 77.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   4.60   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.08

     Unit Hyd Qpeak  (cms)=   0.020

     PEAK FLOW       (cms)=   0.004 (i)
     TIME TO PEAK    (hrs)=   1.417
     RUNOFF VOLUME    (mm)=  18.267
     TOTAL RAINFALL   (mm)=  54.268
     RUNOFF COEFFICIENT   =   0.337

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0202)|   Area    (ha)=   0.04   Curve Number   (CN)= 76.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   4.70   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.04

     Unit Hyd Qpeak  (cms)=   0.047

     PEAK FLOW       (cms)=   0.003 (i)
     TIME TO PEAK    (hrs)=   1.333
     RUNOFF VOLUME    (mm)=   9.041
     TOTAL RAINFALL   (mm)=  54.268
     RUNOFF COEFFICIENT   =   0.167

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0201)|   Area    (ha)=   0.69
|ID= 1 DT= 5.0 min |   Total Imp(%)=  92.00   Dir. Conn.(%)=  92.00
--------------------

                         IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      0.63         0.06
```

```
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       2.00         5.00
     Length            (m)=      67.82        20.00
     Mannings n           =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     172.87        37.10
                 over (min)        5.00         5.00
     Storage Coeff.  (min)=       1.32 (ii)    2.39 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.33         0.30
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.30         0.01          0.306 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.33           1.33
     RUNOFF VOLUME    (mm)=      52.27        16.95          49.44
     TOTAL RAINFALL   (mm)=      54.27        54.27          54.27
     RUNOFF COEFFICIENT   =       0.96         0.31           0.91

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  73.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

-------------------
| ADD HYD  (  0204)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0201):     0.69   0.306     1.33    49.44
     + ID2= 2 (  0202):     0.04   0.003     1.33     9.04
       ================================================
       ID = 3 (  0204):     0.73   0.309     1.33    47.07

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

-------------------
| ADD HYD  (  0205)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0203):     0.04   0.004     1.42    18.27
     + ID2= 2 (  0204):     0.73   0.309     1.33    47.07
       ================================================
       ID = 3 (  0205):     0.77   0.313     1.33    45.58

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
```

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       V    V   I    SSSSS  U   U    A    L              (v 6.2.2020)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat

  Output  filename:
C:\Users\dhordyk\AppData\Local\Civica\VH5\2f607adb-176c-49e7-bd01-798ce897c738\0057
3a8c-4226-40c8-b2c8-19e6dc596de9\scen
  Summary filename:
C:\Users\dhordyk\AppData\Local\Civica\VH5\2f607adb-176c-49e7-bd01-798ce897c738\0057
3a8c-4226-40c8-b2c8-19e6dc596de9\scen


DATE: 04-23-2026                          TIME: 04:12:27

USER:


COMMENTS: _____________________________________________________

--------------------------------------------------------------------------------
-------------------------
  ***********************************************
  ** SIMULATION : 2yr 12hr 5min SCS Type II     **
  ***********************************************


--------------------
|    READ STORM    |    Filename: C:\Users\dhordyk\AppD
|                  |              ata\Local\Temp\
```

```
|                  |              37f28786-36da-4bc7-9c49-8b7e99735d33\7e86db60
| Ptotal= 39.91 mm |    Comments: 2yr 12hr 5min SCS Type II
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.00    0.00 |  3.08    1.60 |  6.17    7.18 |  9.25    1.40
                0.08    1.00 |  3.17    1.60 |  6.25    7.18 |  9.33    1.40
                0.17    1.00 |  3.25    1.60 |  6.33    7.18 |  9.42    1.40
                0.25    1.00 |  3.33    1.60 |  6.42    7.18 |  9.50    1.40
                0.33    1.00 |  3.42    1.60 |  6.50    7.18 |  9.58    1.40
                0.42    1.00 |  3.50    1.60 |  6.58    3.19 |  9.67    1.40
                0.50    1.00 |  3.58    1.60 |  6.67    3.19 |  9.75    1.40
                0.58    1.00 |  3.67    1.60 |  6.75    3.19 |  9.83    1.40
                0.67    1.00 |  3.75    1.60 |  6.83    3.19 |  9.92    1.40
                0.75    1.00 |  3.83    1.60 |  6.92    3.19 | 10.00    1.40
                0.83    1.00 |  3.92    1.60 |  7.00    3.19 | 10.08    0.80
                0.92    1.00 |  4.00    1.60 |  7.08    2.39 | 10.17    0.80
                1.00    1.00 |  4.08    2.39 |  7.17    2.39 | 10.25    0.80
                1.08    1.00 |  4.17    2.39 |  7.25    2.39 | 10.33    0.80
                1.17    1.00 |  4.25    2.39 |  7.33    2.39 | 10.42    0.80
                1.25    1.00 |  4.33    2.39 |  7.42    2.39 | 10.50    0.80
                1.33    1.00 |  4.42    2.39 |  7.50    2.39 | 10.58    0.80
                1.42    1.00 |  4.50    2.39 |  7.58    2.39 | 10.67    0.80
                1.50    1.00 |  4.58    3.19 |  7.67    2.39 | 10.75    0.80
                1.58    1.00 |  4.67    3.19 |  7.75    2.39 | 10.83    0.80
                1.67    1.00 |  4.75    3.19 |  7.83    2.39 | 10.92    0.80
                1.75    1.00 |  4.83    3.19 |  7.92    2.39 | 11.00    0.80
                1.83    1.00 |  4.92    3.19 |  8.00    2.39 | 11.08    0.80
                1.92    1.00 |  5.00    3.19 |  8.08    1.40 | 11.17    0.80
                2.00    1.00 |  5.08    4.79 |  8.17    1.40 | 11.25    0.80
                2.08    1.20 |  5.17    4.79 |  8.25    1.40 | 11.33    0.80
                2.17    1.20 |  5.25    4.79 |  8.33    1.40 | 11.42    0.80
                2.25    1.20 |  5.33    4.79 |  8.42    1.40 | 11.50    0.80
                2.33    1.20 |  5.42    4.79 |  8.50    1.40 | 11.58    0.80
                2.42    1.20 |  5.50    4.79 |  8.58    1.40 | 11.67    0.80
                2.50    1.20 |  5.58   19.16 |  8.67    1.40 | 11.75    0.80
                2.58    1.20 |  5.67   19.16 |  8.75    1.40 | 11.83    0.80
                2.67    1.20 |  5.75   19.16 |  8.83    1.40 | 11.92    0.80
                2.75    1.20 |  5.83   52.68 |  8.92    1.40 | 12.00    0.80
                2.83    1.20 |  5.92   52.68 |  9.00    1.40 |
                2.92    1.20 |  6.00   52.68 |  9.08    1.40 |
                3.00    1.20 |  6.08    7.18 |  9.17    1.40 |

--------------------------------------------------------------------------------

-------------------
| CALIB            |
| NASHYD   (  0203)|   Area    (ha)=   0.04   Curve Number   (CN)= 77.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   4.60   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.08
```

```
     Unit Hyd Qpeak  (cms)=   0.020

     PEAK FLOW       (cms)=   0.002 (i)
     TIME TO PEAK    (hrs)=   6.083
     RUNOFF VOLUME    (mm)=  10.423
     TOTAL RAINFALL   (mm)=  39.910
     RUNOFF COEFFICIENT   =   0.261

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
-------------------
| CALIB            |
| NASHYD   (  0202)|   Area    (ha)=   0.04   Curve Number   (CN)= 76.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   4.70   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.04

     Unit Hyd Qpeak  (cms)=   0.047

     PEAK FLOW       (cms)=   0.001 (i)
     TIME TO PEAK    (hrs)=   6.083
     RUNOFF VOLUME    (mm)=   5.130
     TOTAL RAINFALL   (mm)=  39.910
     RUNOFF COEFFICIENT   =   0.129

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
-------------------
| CALIB            |
| STANDHYD (  0201)|   Area    (ha)=   0.69
|ID= 1 DT= 5.0 min |   Total Imp(%)=  92.00   Dir. Conn.(%)=  92.00
-------------------

                               IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.63         0.06
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       2.00         5.00
     Length            (m)=      67.82        20.00
     Mannings n           =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=      52.68        15.88
                 over (min)        5.00         5.00
     Storage Coeff.  (min)=       2.12 (ii)    3.84 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.31         0.25
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.09         0.00          0.095 (iii)
     TIME TO PEAK    (hrs)=       6.08         6.08           6.08
     RUNOFF VOLUME    (mm)=      37.91         9.46          35.63
```

```
     TOTAL RAINFALL   (mm)=      39.91        39.91          39.91
     RUNOFF COEFFICIENT   =       0.95         0.24           0.89

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  73.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0204)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0201):     0.69   0.095     6.08    35.63
     + ID2= 2 (  0202):     0.04   0.001     6.08     5.13
       ====================================================
       ID = 3 (  0204):     0.73   0.096     6.08    33.84

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0205)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0203):     0.04   0.002     6.08    10.42
     + ID2= 2 (  0204):     0.73   0.096     6.08    33.84
       ====================================================
       ID = 3 (  0205):     0.77   0.098     6.08    32.63

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
================================================================================
========================

       V    V   I    SSSSS  U   U    A    L              (v 6.2.2020)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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```

```
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                  *****  D E T A I L E D   O U T P U T *****

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat

  Output  filename:
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7e96-6ccf-43d6-be1c-65cfb2d6b44f\scen
  Summary filename:
C:\Users\dhordyk\AppData\Local\Civica\VH5\2f607adb-176c-49e7-bd01-798ce897c738\23df
7e96-6ccf-43d6-be1c-65cfb2d6b44f\scen


DATE: 04-23-2026                          TIME: 04:12:27

USER:


COMMENTS: _____________________________________________________

--------------------------------------------------------------------------------
----------------------
  ***********************************************
  ** SIMULATION : 2yr 4hr 5min Chicago          **
  ***********************************************

--------------------
| CHICAGO STORM    |    IDF curve parameters: A= 789.500
| Ptotal= 32.53 mm |                          B=   7.830
--------------------                          C=   0.830
                        used in:   INTENSITY =  A / (t + B)^C

                        Duration of storm  =  4.00 hrs
                        Storm time step    =  5.00 min
                        Time to peak ratio =  0.33

              TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
               hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
              0.00    1.71 |  1.00    9.23 |  2.00    5.50 |  3.00    2.37
              0.08    1.83 |  1.08   14.87 |  2.08    4.94 |  3.08    2.26
              0.17    1.96 |  1.17   34.91 |  2.17    4.48 |  3.17    2.17
              0.25    2.12 |  1.25   94.96 |  2.25    4.11 |  3.25    2.08
              0.33    2.31 |  1.33   44.71 |  2.33    3.79 |  3.33    2.00
              0.42    2.54 |  1.42   25.16 |  2.42    3.52 |  3.42    1.93
```

```
              0.50    2.82 |  1.50   17.04 |  2.50    3.28 |  3.50    1.86
              0.58    3.18 |  1.58   12.74 |  2.58    3.08 |  3.58    1.80
              0.67    3.65 |  1.67   10.12 |  2.67    2.90 |  3.67    1.74
              0.75    4.29 |  1.75    8.37 |  2.75    2.75 |  3.75    1.69
              0.83    5.21 |  1.83    7.13 |  2.83    2.61 |  3.83    1.64
              0.92    6.66 |  1.92    6.21 |  2.92    2.48 |  3.92    1.59


--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0203)|   Area    (ha)=   0.04   Curve Number   (CN)= 77.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   4.60   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.08

     Unit Hyd Qpeak  (cms)=   0.020

     PEAK FLOW       (cms)=   0.001 (i)
     TIME TO PEAK    (hrs)=   1.417
     RUNOFF VOLUME    (mm)=   6.979
     TOTAL RAINFALL   (mm)=  32.526
     RUNOFF COEFFICIENT   =   0.215

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0202)|   Area    (ha)=   0.04   Curve Number   (CN)= 76.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   4.70   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.04

     Unit Hyd Qpeak  (cms)=   0.047

     PEAK FLOW       (cms)=   0.001 (i)
     TIME TO PEAK    (hrs)=   1.333
     RUNOFF VOLUME    (mm)=   3.422
     TOTAL RAINFALL   (mm)=  32.526
     RUNOFF COEFFICIENT   =   0.105

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0201)|   Area    (ha)=   0.69
|ID= 1 DT= 5.0 min |   Total Imp(%)=  92.00   Dir. Conn.(%)=  92.00
--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.63         0.06
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       2.00         5.00
     Length            (m)=      67.82        20.00
     Mannings n             =   0.013        0.250

     Max.Eff.Inten.(mm/hr)=      94.96        11.41
               over (min)        5.00         5.00
     Storage Coeff.  (min)=       1.68 (ii)    3.04 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.32         0.27
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.16         0.00          0.164 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.33           1.33
     RUNOFF VOLUME    (mm)=      30.53         6.24          28.58
     TOTAL RAINFALL   (mm)=      32.53        32.53          32.53
     RUNOFF COEFFICIENT   =       0.94         0.19           0.88

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  73.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0204)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0201):     0.69   0.164     1.33    28.58
     + ID2= 2 (  0202):     0.04   0.001     1.33     3.42
       ====================================================
       ID = 3 (  0204):     0.73   0.164     1.33    27.11

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  0205)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0203):     0.04   0.001     1.42     6.98
     + ID2= 2 (  0204):     0.73   0.164     1.33    27.11
       ====================================================
       ID = 3 (  0205):     0.77   0.166     1.33    26.06

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
```

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================================================================================
=======================

       V    V   I    SSSSS  U   U    A    L             (v 6.2.2020)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat

  Output  filename:
C:\Users\dhordyk\AppData\Local\Civica\VH5\2f607adb-176c-49e7-bd01-798ce897c738\ac28
c1f5-0d32-4e07-a798-6834fa34a3d2\scen
  Summary filename:
C:\Users\dhordyk\AppData\Local\Civica\VH5\2f607adb-176c-49e7-bd01-798ce897c738\ac28
c1f5-0d32-4e07-a798-6834fa34a3d2\scen


DATE: 04-23-2026                          TIME: 04:12:28

USER:


COMMENTS: _____________________________________________________

--------------------------------------------------------------------------------
------------------------
  ************************************************
  ** SIMULATION : 50yr 12hr 5min SCS Type II    **
  ************************************************


-------------------
|    READ STORM    |    Filename: C:\Users\dhordyk\AppD
|                  |              ata\Local\Temp\
|                  |              37f28786-36da-4bc7-9c49-8b7e99735d33\483651c5
| Ptotal= 73.24 mm |   Comments: 50yr 12hr 5min SCS Type II
-------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	0.00	3.08	2.93	6.17	13.18	9.25	2.56
0.08	1.83	3.17	2.93	6.25	13.18	9.33	2.56
0.17	1.83	3.25	2.93	6.33	13.18	9.42	2.56
0.25	1.83	3.33	2.93	6.42	13.18	9.50	2.56
0.33	1.83	3.42	2.93	6.50	13.18	9.58	2.56
0.42	1.83	3.50	2.93	6.58	5.86	9.67	2.56
0.50	1.83	3.58	2.93	6.67	5.86	9.75	2.56
0.58	1.83	3.67	2.93	6.75	5.86	9.83	2.56
0.67	1.83	3.75	2.93	6.83	5.86	9.92	2.56
0.75	1.83	3.83	2.93	6.92	5.86	10.00	2.56
0.83	1.83	3.92	2.93	7.00	5.86	10.08	1.46
0.92	1.83	4.00	2.93	7.08	4.39	10.17	1.46
1.00	1.83	4.08	4.39	7.17	4.39	10.25	1.46
1.08	1.83	4.17	4.39	7.25	4.39	10.33	1.46
1.17	1.83	4.25	4.39	7.33	4.39	10.42	1.46
1.25	1.83	4.33	4.39	7.42	4.39	10.50	1.46
1.33	1.83	4.42	4.39	7.50	4.39	10.58	1.46
1.42	1.83	4.50	4.39	7.58	4.39	10.67	1.46
1.50	1.83	4.58	5.86	7.67	4.39	10.75	1.46
1.58	1.83	4.67	5.86	7.75	4.39	10.83	1.46
1.67	1.83	4.75	5.86	7.83	4.39	10.92	1.46
1.75	1.83	4.83	5.86	7.92	4.39	11.00	1.46
1.83	1.83	4.92	5.86	8.00	4.39	11.08	1.46
1.92	1.83	5.00	5.86	8.08	2.56	11.17	1.46
2.00	1.83	5.08	8.79	8.17	2.56	11.25	1.46
2.08	2.20	5.17	8.79	8.25	2.56	11.33	1.46
2.17	2.20	5.25	8.79	8.33	2.56	11.42	1.46
2.25	2.20	5.33	8.79	8.42	2.56	11.50	1.46
2.33	2.20	5.42	8.79	8.50	2.56	11.58	1.46
2.42	2.20	5.50	8.79	8.58	2.56	11.67	1.46
2.50	2.20	5.58	35.16	8.67	2.56	11.75	1.46
2.58	2.20	5.67	35.16	8.75	2.56	11.83	1.46
2.67	2.20	5.75	35.16	8.83	2.56	11.92	1.46
2.75	2.20	5.83	96.68	8.92	2.56	12.00	1.46
2.83	2.20	5.92	96.68	9.00	2.56		
2.92	2.20	6.00	96.68	9.08	2.56		
3.00	2.20	6.08	13.18	9.17	2.56		

```
--------------------------------------------------------------------------------

-------------------
| CALIB            |
| NASHYD   (  0203)|   Area    (ha)=   0.04   Curve Number   (CN)= 77.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   4.60   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.08


     Unit Hyd Qpeak  (cms)=   0.020

     PEAK FLOW       (cms)=   0.006 (i)
     TIME TO PEAK    (hrs)=   6.083
     RUNOFF VOLUME    (mm)=  30.304
     TOTAL RAINFALL   (mm)=  73.240
     RUNOFF COEFFICIENT   =   0.414

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
-------------------
| CALIB            |
| NASHYD   (  0202)|   Area    (ha)=   0.04   Curve Number   (CN)= 76.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   4.70   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.04

     Unit Hyd Qpeak  (cms)=   0.047

     PEAK FLOW       (cms)=   0.003 (i)
     TIME TO PEAK    (hrs)=   6.083
     RUNOFF VOLUME    (mm)=  15.084
     TOTAL RAINFALL   (mm)=  73.240
     RUNOFF COEFFICIENT   =   0.206

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
-------------------
| CALIB            |
| STANDHYD (  0201)|   Area    (ha)=   0.69
|ID= 1 DT= 5.0 min |   Total Imp(%)=  92.00   Dir. Conn.(%)=  92.00
-------------------

                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      0.63         0.06
     Dep. Storage     (mm)=      2.00         5.00
     Average Slope     (%)=      2.00         5.00
     Length            (m)=     67.82        20.00
     Mannings n            =     0.013        0.250

     Max.Eff.Inten.(mm/hr)=     96.68        47.64
                 over (min)       5.00         5.00
     Storage Coeff.  (min)=     1.67 (ii)    3.02 (ii)
     Unit Hyd. Tpeak (min)=      5.00         5.00
     Unit Hyd. peak  (cms)=      0.32         0.28
                                                      *TOTALS*
     PEAK FLOW       (cms)=      0.17         0.01         0.178 (iii)
     TIME TO PEAK    (hrs)=      6.08         6.08          6.08
     RUNOFF VOLUME    (mm)=     71.24        28.71         67.84

     TOTAL RAINFALL   (mm)=     73.24        73.24         73.24
     RUNOFF COEFFICIENT   =      0.97         0.39          0.93

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  73.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

-------------------
| ADD HYD  (  0204)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0201):     0.69   0.178     6.08    67.84
     + ID2= 2 (  0202):     0.04   0.003     6.08    15.08
       ==========================================================
       ID = 3 (  0204):     0.73   0.181     6.08    64.74

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

-------------------
| ADD HYD  (  0205)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0203):     0.04   0.006     6.08    30.30
     + ID2= 2 (  0204):     0.73   0.181     6.08    64.74
       ==========================================================
       ID = 3 (  0205):     0.77   0.187     6.08    62.96

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
================================================================================
=======================

       V    V   I    SSSSS  U   U    A    L             (v 6.2.2020)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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***** D E T A I L E D O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat

Output filename:
C:\Users\dhordyk\AppData\Local\Civica\VH5\2f607adb-176c-49e7-bd01-798ce897c738\73ccb115-c917-49a3-b900-c9575a02dc64\scen
Summary filename:
C:\Users\dhordyk\AppData\Local\Civica\VH5\2f607adb-176c-49e7-bd01-798ce897c738\73ccb115-c917-49a3-b900-c9575a02dc64\scen

DATE: 04-23-2026 TIME: 04:12:28

USER:

COMMENTS: _____

** SIMULATION : 50yr 4hr 5min Chicago **

| CHICAGO STORM | IDF curve parameters: A=1466.000
| Ptotal= 59.99 mm | B= 6.550
C= 0.832
used in: INTENSITY = A / (t + B)^C

Duration of storm = 4.00 hrs
Storm time step = 5.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	3.06	1.00	16.22	2.00	9.69	3.00	4.21
0.08	3.26	1.08	26.24	2.08	8.71	3.08	4.03
0.17	3.50	1.17	63.87	2.17	7.91	3.17	3.86
0.25	3.78	1.25	191.45	2.25	7.25	3.25	3.71
0.33	4.11	1.33	82.81	2.33	6.70	3.33	3.57
0.42	4.51	1.42	45.02	2.42	6.22	3.42	3.44
0.50	5.01	1.50	30.13	2.50	5.82	3.50	3.32
0.58	5.63	1.58	22.42	2.58	5.46	3.58	3.21
0.67	6.45	1.67	17.78	2.67	5.15	3.67	3.11
0.75	7.57	1.75	14.71	2.75	4.87	3.75	3.01
0.83	9.18	1.83	12.54	2.83	4.63	3.83	2.92
0.92	11.71	1.92	10.93	2.92	4.41	3.92	2.84

| CALIB | Area (ha)= 0.04 Curve Number (CN)= 77.0
| NASHYD (0203) | Ia (mm)= 4.60 # of Linear Res.(N)= 3.00
|ID= 1 DT= 5.0 min | U.H. Tp(hrs)= 0.08

Unit Hyd Qpeak (cms)= 0.020

PEAK FLOW (cms)= 0.005 (i)
TIME TO PEAK (hrs)= 1.333
RUNOFF VOLUME (mm)= 21.730
TOTAL RAINFALL (mm)= 59.992
RUNOFF COEFFICIENT = 0.362

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

| CALIB | Area (ha)= 0.04 Curve Number (CN)= 76.0
| NASHYD (0202) | Ia (mm)= 4.70 # of Linear Res.(N)= 3.00
|ID= 1 DT= 5.0 min | U.H. Tp(hrs)= 0.04

Unit Hyd Qpeak (cms)= 0.047

PEAK FLOW (cms)= 0.003 (i)
TIME TO PEAK (hrs)= 1.333
RUNOFF VOLUME (mm)= 10.775
TOTAL RAINFALL (mm)= 59.992
RUNOFF COEFFICIENT = 0.180

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

| CALIB | Area (ha)= 0.69
| STANDHYD (0201) | Total Imp(%)= 92.00 Dir. Conn.(%)= 92.00
|ID= 1 DT= 5.0 min |

IMPERVIOUS PERVIOUS (i)
Surface Area (ha)= 0.63 0.06

Dep. Storage (mm)= 2.00 5.00
Average Slope (%)= 2.00 5.00
Length (m)= 67.82 20.00
Mannings n = 0.013 0.250

Max.Eff.Inten.(mm/hr)= 191.45 44.51
over (min) 5.00 5.00
Storage Coeff. (min)= 1.27 (ii) 2.29 (ii)
Unit Hyd. Tpeak (min)= 5.00 5.00
Unit Hyd. peak (cms)= 0.33 0.30

TOTALS
PEAK FLOW (cms)= 0.33 0.01 0.341 (iii)
TIME TO PEAK (hrs)= 1.33 1.33 1.33
RUNOFF VOLUME (mm)= 57.99 20.30 54.98
TOTAL RAINFALL (mm)= 59.99 59.99 59.99
RUNOFF COEFFICIENT = 0.97 0.34 0.92

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 73.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

| ADD HYD (0204) |
| 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0201):	0.69	0.341	1.33	54.98
+ ID2= 2 (0202):	0.04	0.003	1.33	10.77
ID = 3 (0204):	0.73	0.344	1.33	52.38

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (0205) |
| 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0203):	0.04	0.005	1.33	21.73
+ ID2= 2 (0204):	0.73	0.344	1.33	52.38
ID = 3 (0205):	0.77	0.349	1.33	50.80

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

V V I SSSSS U U A L (v 6.2.2020)
V V I SS U U A A L
V V I SS U U AAAAA L
V V I SS U U A A L
VV I SSSSS UUUUU A A LLLLL

OOO TTTTT TTTTT H H Y Y M M OOO TM
O O T T H H Y Y MM MM O O
O O T T H H Y M M O O
OOO T T H H Y M M OOO

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***** D E T A I L E D O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat

Output filename:
C:\Users\dhordyk\AppData\Local\Civica\VH5\2f607adb-176c-49e7-bd01-798ce897c738\72da8b40-5165-469b-9d15-8ec03487dc37\scen
Summary filename:
C:\Users\dhordyk\AppData\Local\Civica\VH5\2f607adb-176c-49e7-bd01-798ce897c738\72da8b40-5165-469b-9d15-8ec03487dc37\scen

DATE: 04-23-2026 TIME: 04:12:27

USER:

COMMENTS: _____

** SIMULATION : 5yr 12hr 5min SCS Type II **

| READ STORM | Filename: C:\Users\dhordyk\AppData\Local\Temp\

	37f28786-36da-4bc7-9c49-8b7e99735d33\f1ecfee1
Ptotal= 51.35 mm	Comments: 5yr 12hr 5min SCS Type II

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	0.00	3.08	2.05	6.17	9.24	9.25	1.80
0.08	1.28	3.17	2.05	6.25	9.24	9.33	1.80
0.17	1.28	3.25	2.05	6.33	9.24	9.42	1.80
0.25	1.28	3.33	2.05	6.42	9.24	9.50	1.80
0.33	1.28	3.42	2.05	6.50	9.24	9.58	1.80
0.42	1.28	3.50	2.05	6.58	4.11	9.67	1.80
0.50	1.28	3.58	2.05	6.67	4.11	9.75	1.80
0.58	1.28	3.67	2.05	6.75	4.11	9.83	1.80
0.67	1.28	3.75	2.05	6.83	4.11	9.92	1.80
0.75	1.28	3.83	2.05	6.92	4.11	10.00	1.80
0.83	1.28	3.92	2.05	7.00	4.11	10.08	1.03
0.92	1.28	4.00	2.05	7.08	3.08	10.17	1.03
1.00	1.28	4.08	3.08	7.17	3.08	10.25	1.03
1.08	1.28	4.17	3.08	7.25	3.08	10.33	1.03
1.17	1.28	4.25	3.08	7.33	3.08	10.42	1.03
1.25	1.28	4.33	3.08	7.42	3.08	10.50	1.03
1.33	1.28	4.42	3.08	7.50	3.08	10.58	1.03
1.42	1.28	4.50	3.08	7.58	3.08	10.67	1.03
1.50	1.28	4.58	4.11	7.67	3.08	10.75	1.03
1.58	1.28	4.67	4.11	7.75	3.08	10.83	1.03
1.67	1.28	4.75	4.11	7.83	3.08	10.92	1.03
1.75	1.28	4.83	4.11	7.92	3.08	11.00	1.03
1.83	1.28	4.92	4.11	8.00	3.08	11.08	1.03
1.92	1.28	5.00	4.11	8.08	1.80	11.17	1.03
2.00	1.28	5.08	6.16	8.17	1.80	11.25	1.03
2.08	1.54	5.17	6.16	8.25	1.80	11.33	1.03
2.17	1.54	5.25	6.16	8.33	1.80	11.42	1.03
2.25	1.54	5.33	6.16	8.42	1.80	11.50	1.03
2.33	1.54	5.42	6.16	8.50	1.80	11.58	1.03
2.42	1.54	5.50	6.16	8.58	1.80	11.67	1.03
2.50	1.54	5.58	24.65	8.67	1.80	11.75	1.03
2.58	1.54	5.67	24.65	8.75	1.80	11.83	1.03
2.67	1.54	5.75	24.65	8.83	1.80	11.92	1.03
2.75	1.54	5.83	67.78	8.92	1.80	12.00	1.03
2.83	1.54	5.92	67.78	9.00	1.80		
2.92	1.54	6.00	67.78	9.08	1.80		
3.00	1.54	6.08	9.24	9.17	1.80		

CALIB	
NASHYD (0203)	Area (ha)= 0.04 Curve Number (CN)= 77.0
ID= 1 DT= 5.0 min	Ia (mm)= 4.60 # of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.08

Unit Hyd Qpeak (cms)= 0.020

PEAK FLOW (cms)= 0.003 (i)
TIME TO PEAK (hrs)= 6.083
RUNOFF VOLUME (mm)= 16.566
TOTAL RAINFALL (mm)= 51.350
RUNOFF COEFFICIENT = 0.323

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
NASHYD (0202)	Area (ha)= 0.04 Curve Number (CN)= 76.0
ID= 1 DT= 5.0 min	Ia (mm)= 4.70 # of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.04

Unit Hyd Qpeak (cms)= 0.047

PEAK FLOW (cms)= 0.002 (i)
TIME TO PEAK (hrs)= 6.083
RUNOFF VOLUME (mm)= 8.193
TOTAL RAINFALL (mm)= 51.350
RUNOFF COEFFICIENT = 0.160

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (0201)	Area (ha)= 0.69
ID= 1 DT= 5.0 min	Total Imp(%)= 92.00 Dir. Conn.(%)= 92.00

		IMPERVIOUS	PERVIOUS (i)	
Surface Area	(ha)=	0.63	0.06	
Dep. Storage	(mm)=	2.00	5.00	
Average Slope	(%)=	2.00	5.00	
Length	(m)=	67.82	20.00	
Mannings n	=	0.013	0.250	
Max.Eff.Inten.(mm/hr)=		67.78	25.61	
over (min)		5.00	5.00	
Storage Coeff. (min)=		1.92 (ii)	3.48 (ii)	
Unit Hyd. Tpeak (min)=		5.00	5.00	
Unit Hyd. peak (cms)=		0.31	0.26	
				TOTALS
PEAK FLOW	(cms)=	0.12	0.00	0.124 (iii)
TIME TO PEAK	(hrs)=	6.08	6.08	6.08
RUNOFF VOLUME	(mm)=	49.35	15.31	46.63
TOTAL RAINFALL	(mm)=	51.35	51.35	51.35
RUNOFF COEFFICIENT	=	0.96	0.30	0.91

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 73.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (0204)					
1 + 2 = 3		AREA	QPEAK	TPEAK	R.V.
		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0201):		0.69	0.124	6.08	46.63
+ ID2= 2 (0202):		0.04	0.002	6.08	8.19
ID = 3 (0204):		0.73	0.125	6.08	44.37

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0205)					
1 + 2 = 3		AREA	QPEAK	TPEAK	R.V.
		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0203):		0.04	0.003	6.08	16.57
+ ID2= 2 (0204):		0.73	0.125	6.08	44.37
ID = 3 (0205):		0.77	0.128	6.08	42.93

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
       V    V   I    SSSSS  U   U    A    L              (v 6.2.2020)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
Developed and Distributed by Smart City Water Inc
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***** D E T A I L E D O U T P U T *****

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DATE: 04-23-2026 TIME: 04:12:28

USER:

COMMENTS: _____

```
  **********************************************
  ** SIMULATION : 5yr 4hr 5min Chicago          **
  **********************************************
```

CHICAGO STORM	IDF curve parameters: A= 950.000
Ptotal= 41.50 mm	B= 6.750
	C= 0.820

used in: INTENSITY = A / (t + B)^C

Duration of storm = 4.00 hrs
Storm time step = 5.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	2.25	1.00	11.49	2.00	6.95	3.00	3.08
0.08	2.40	1.08	18.36	2.08	6.26	3.08	2.95
0.17	2.57	1.17	43.55	2.17	5.70	3.17	2.83
0.25	2.77	1.25	125.98	2.25	5.24	3.25	2.72
0.33	3.01	1.33	56.09	2.33	4.85	3.33	2.62
0.42	3.29	1.42	31.06	2.42	4.51	3.42	2.53

```
                0.50    3.65 |  1.50   21.01 |  2.50    4.22 |  3.50    2.44
                0.58    4.09 |  1.58   15.76 |  2.58    3.97 |  3.58    2.36
                0.67    4.67 |  1.67   12.57 |  2.67    3.75 |  3.67    2.29
                0.75    5.46 |  1.75   10.45 |  2.75    3.55 |  3.75    2.22
                0.83    6.60 |  1.83    8.94 |  2.83    3.38 |  3.83    2.15
                0.92    8.37 |  1.92    7.82 |  2.92    3.22 |  3.92    2.09


--------------------------------------------------------------------------------
-------------------
| CALIB            |
| NASHYD   (  0203)|   Area    (ha)=   0.04   Curve Number   (CN)= 77.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   4.60   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.08

     Unit Hyd Qpeak  (cms)=   0.020

     PEAK FLOW       (cms)=   0.002 (i)
     TIME TO PEAK    (hrs)=   1.417
     RUNOFF VOLUME    (mm)=  11.219
     TOTAL RAINFALL   (mm)=  41.505
     RUNOFF COEFFICIENT   =   0.270

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
-------------------
| CALIB            |
| NASHYD   (  0202)|   Area    (ha)=   0.04   Curve Number   (CN)= 76.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   4.70   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.04

     Unit Hyd Qpeak  (cms)=   0.047

     PEAK FLOW       (cms)=   0.002 (i)
     TIME TO PEAK    (hrs)=   1.333
     RUNOFF VOLUME    (mm)=   5.528
     TOTAL RAINFALL   (mm)=  41.505
     RUNOFF COEFFICIENT   =   0.133

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
-------------------
| CALIB            |
| STANDHYD (  0201)|   Area    (ha)=   0.69
|ID= 1 DT= 5.0 min |   Total Imp(%)=  92.00   Dir. Conn.(%)=  92.00
-------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      0.63         0.06
     Dep. Storage     (mm)=      2.00         5.00
     Average Slope     (%)=      2.00         5.00
     Length            (m)=     67.82        20.00
     Mannings n             =    0.013        0.250

     Max.Eff.Inten.(mm/hr)=    125.98        20.16
                 over (min)        5.00         5.00
     Storage Coeff.  (min)=       1.50 (ii)    2.71 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.33         0.29
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.22         0.00          0.220 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.33           1.33
     RUNOFF VOLUME    (mm)=      39.50        10.22          37.16
     TOTAL RAINFALL   (mm)=      41.50        41.50          41.50
     RUNOFF COEFFICIENT   =       0.95         0.25           0.90

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  73.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

-------------------
| ADD HYD  (  0204)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0201):     0.69   0.220     1.33    37.16
     + ID2= 2 (  0202):     0.04   0.002     1.33     5.53
       ================================================
       ID = 3 (  0204):     0.73   0.222     1.33    35.31

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

-------------------
| ADD HYD  (  0205)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0203):     0.04   0.002     1.42    11.22
     + ID2= 2 (  0204):     0.73   0.222     1.33    35.31
       ================================================
       ID = 3 (  0205):     0.77   0.224     1.33    34.06

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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 FINISH
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Specifications

1. Must be independently tested to the 2013 NJDEP Laboratory Protocol and 2013 ETV Canada protocol (ISO 14024:2016). Separator must be sized based on this data.

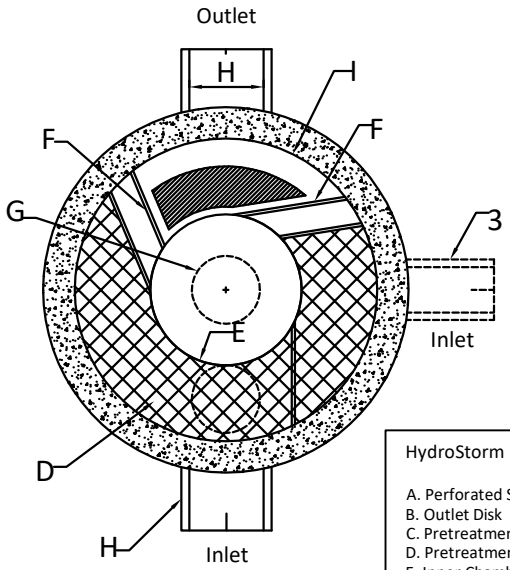
2. Any testing performed by the manufacturer is unacceptable to demonstrate an alternate equal.

3. Field Testing is unreliable, site and storm specific, and subject to compounding equipment and analytical errors and therefore is unacceptable as verification of an alternate equal. TARP verfication as per NJDEP is testing consistent with the 2013 NJDEP laboratory protocol.

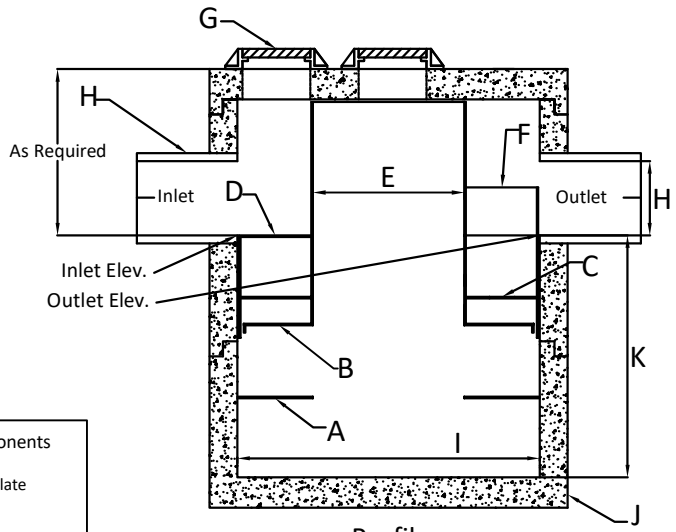
4. The separator must be designed based on the following criteria:

Flow Criteria	
Water Quality FLow Rate cfs (L/s)	
Peak Design Flow Rate cfs (L/s)	

TSS Removal Criteria	
Annual TSS Removal (%)	
NJDEP/ETV Canada TSS	
OK110 Sand	
City of Toronto	
Other	



Plan



Profile

HydroStorm Components

A. Perforated Scour Plate
B. Outlet Disk
C. Pretreatment Disk
D. Pretreatment Grate
E. Inner Chamber
F. By-Pass Weirs
G. Frame and Cover (1-2)
H. Inlet and Outlet Pipes
I. Structure Diameter
J. Base Extension (HS4 - HS6)
K. Sump Depth

HydroStorm by Hydroworks, LLC
US Patent No. 10,710,907
www.hydroworks.com
888-290-7900

HydroStorm Dimensions / Capacities

Model	Diameter ft (m) (9)	Sump Depth ft (m) (11)	Inner Chamber Diam. ft (m) (5)	Max. Pipe in (mm) (8)	Oil Spill Volume gal (L)	Sediment Volume ft3 (m3)	Total Volume gal (L)
HS 3	3 (0.9)	3 (0.9)	1.5 (0.45)	18 (450)	40 (155)	10 (0.35)	155 (600)
HS 4	4 (1.2)	4 (1.2)	2 (0.6)	24 (600)	95 (375)	30 (0.85)	375 (1420)
HS 5	5 (1.5)	5 (1.5)	2.5 (0.8)	30 (750)	165 (635)	60 (1.8)	730 (2780)
HS 6	6 (1.8)	6 (1.8)	3 (0.9)	36 (900)	270 (1030)	110 (3.2)	1265 (4800)
HS 7	7 (2.1)	6.5 (2.0)	3.5 (1.0)	42 (1050)	410 (1560)	160 (4.6)	1870 (7080)
HS 8	8 (2.4)	7 (2.1)	4 (1.2)	48 (1200)	615 (2330)	220 (6.2)	2630 (9960)
HS 10	10 (3.0)	9 (2.7)	5 (1.5)	60 (1500)	1130 (4285)	465 (13.1)	5285 (20015)
HS 12	12 (3.6)	11 (3.3)	6 (1.8)	72 (1800)	1875 (7100)	835 (23.7)	9305 (35225)

Notes:

1. Headloss K factor of 1.04 for hydraulic gradeline calculations

2. Sump depths shown are typical. Additional depth can be added as required

3. Multiple inlet pipes allowed

4. Drops allowed

5. Inlet invert elevations should be the same or higher than the outlet invert elevation. Inlet can be up to 12" (300 mm) lower than outlet if pretreatment area is omitted but 12" (300 mm) must be added to sump depth to maintain overall treatment volume.

6. Solid Cover shown. HydroStorm can be desiged with an inlet grate if required.

7. Oil capacities given are spill capacities.

8. Sediment depths are maximum holding capacities and not recommended capacities for regular maintenance.

9. Capacities are rounded down to nearest 5 gal or ft3 (1L or 0.1 m3 for metric units)

10. Base Extensions not provided on standard units larger than the HS 6. Extensions can be provided if required due to groundwater/buoyancy concerns at the request of the engineer of record.

11. HS4 to HS6 models require one frame and cover. HS7 to HS12 models require two covers

Hydroworks HydroStorm

PROJECT:

LOCATION:

REVISION DATE: 08/07/2020

Hydroworks

Hydroworks® HydroStorm

Operations & Maintenance Manual

Version 1.2

Please call Hydroworks at 888-290-7900 or email us at support@hydroworks.com if you have any questions regarding the Inspection Checklist. Please email a copy of the completed checklist to Hydroworks at for our records.

Introduction

The HydroStorm is a state-of-the-art hydrodynamic separator. Hydrodynamic separators remove solids, debris and lighter than water (oil, trash, floating debris) pollutants from stormwater. Hydrodynamic separators and other water quality measures are mandated by regulatory agencies (Town/City, State, Federal Government) to protect storm water quality from pollution generated by urban development (traffic, people) as part of new development permitting requirements.

As storm water treatment structures fill up with pollutants they become less and less effective in removing new pollution. Therefore, it is important that storm water treatment structures be maintained on a regular basis to ensure that they are operating at optimum performance. The HydroStorm is no different in this regard and this manual has been assembled to provide the owner/operator with the necessary information to inspect and coordinate maintenance of their HydroStorm.

Hydroworks® HydroStorm Operation

The Hydroworks HydroStorm (HS) separator is a unique hydrodynamic by-pass separator. It incorporates a protected submerged pretreatment zone to collect larger solids, a treatment tank to remove finer solids, and a dual set of weirs to create a high flow bypass. High flows are conveyed directly to the outlet and do not enter the treatment area, however, the submerged pretreatment area still allows removal of coarse solids during high flows.

Under normal or low flows, water enters an inlet area with a horizontal grate. The area underneath the grate is submerged with openings to the main treatment area of the separator. Coarse solids fall through the grate and are either trapped in the pretreatment area or conveyed into the main treatment area depending on the flow rate. Fines are transported into the main treatment area. Openings and weirs in the pretreatment area allow entry of water and solids into the main treatment area and cause water to rotate in the main treatment area creating a vortex motion. Water in the main treatment area is forced to rise along the walls of the separator to discharge from the treatment area to the downstream pipe.

The vortex motion forces solids and floatables to the middle of the inner chamber. Floatables are trapped since the inlet to the treatment area is submerged. The design maximizes the retention of settled solids since solids are forced to the center of the inner chamber by the vortex motion of water while water must flow up the walls of the separator to discharge into the downstream pipe.

A set of high flow weirs near the outlet pipe create a high flow bypass over both the pretreatment area and main treatment chamber. The rate of flow into the treatment area is regulated by the number and size of openings into the treatment chamber and the height of by-pass weirs. High flows flow over the weirs directly to the outlet pipe preventing the scour and resuspension of any fines collected in the treatment chamber.

A central access tube is located in the structure to provide access for cleaning. The arrangement of the inlet area and bypass weirs near the outlet pipe facilitate the use of multiple inlet pipes.

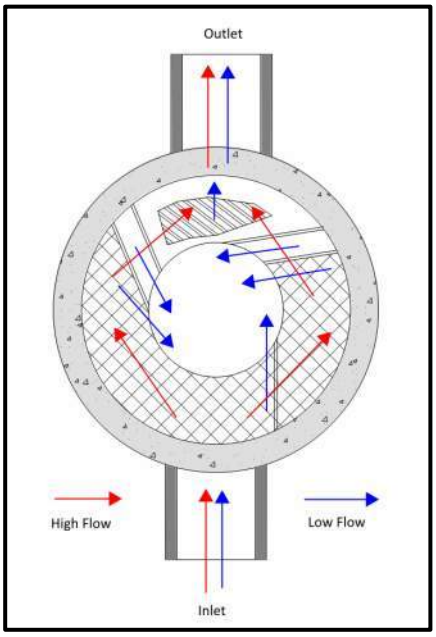


Figure 1. Hydroworks HydroStorm Operation – Plan View

Figure 2 is a profile view of the HydroStorm separator showing the flow patterns for low and high flows.

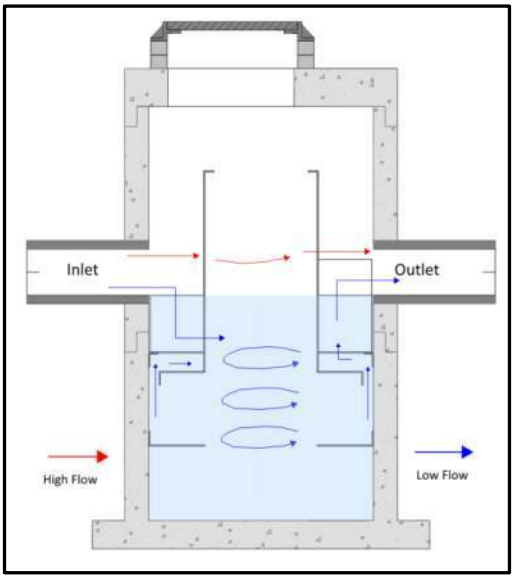


Figure 2. Hydroworks HydroStorm Operation – Profile View

The HS 4i is an inlet version of the HS 4 separator. There is a catch-basin grate on top of the HS 4i. A funnel sits sits underneath the grate on the frame and directs the water to the inlet side of the separator to ensure all lows flows are properly treated. The whole funnel is removed for inspection and cleaning.

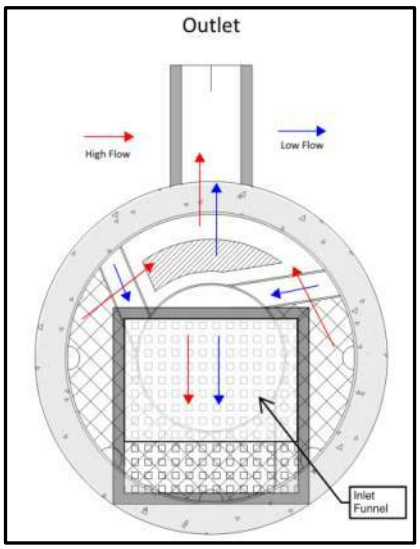


Figure 3. Hydroworks HS 4i Funnel

Construction Materials

The inner chamber and outlet baffle are made out of a copolymer plastic. The shell of the structure is pre-cast concrete. Pre-cast concrete is readily accepted by all municipalities since it has the following advantages:

- long service life
- ease of installation (less dependent on backfill (contractor proficiency) for structural integrity)
- concrete structures are designed for both anti-buoyancy and traffic loading without any field requirements (such as structural loading slabs in traffic areas and anti-buoyancy slabs to prevent groundwater uplift).
- low maintenance requirements

Hydroworks HS Separator Dimensions and Capacities

The HS separator is manufactured in a variety of sizes from 4 ft inside diameter to 12 ft inside diameter as shown in Table 1. Larger sizes may not be available in all areas. Please check with Hydroworks to ensure availability of the larger model sizes.

Table 1. Hydroworks HS Separator Dimensions*					
Model	Structure Inside Diam. (SID) (mm)	Structure Depth (mm)*	Sediment/ Sinking Trash Volume (L)	Oil/Floating Trash Volume (L)	Permanent Pool Wet Volume (L)
HS 3	900	1050	420	150	700
HS 4	1200	1200	845	355	1420
HS 5	1500	1500	1695	620	2775
HS 6	1800	1800	3110	1020	4800
HS 7	2100	1950	4530	1550	7080
HS 8	2400	2100	6225	2325	9960
HS 9	2700	2400	9200	3195	14410
HS 10	3000	2700	13025	4275	20015
HS 12	3600	3000	20525	7095	30535

*Dimensions vary with project requirements

The volumes provided in Table 1 for oil and sediment are to full capacity and not indicative of recommended depths/volumes for maintenance.

Headloss

Any water quality system implemented in a storm drain network will create headloss in the system. In general, depending on the configuration of the by-pass, systems designed to treat high flows or all of the flow will have a higher headloss impact on the storm drain network than systems that by-pass high flows.

The headloss created by the HS separator was measured in an independent laboratory (Alden Research Laboratory) for a full-scale HS 4. The K value ($h = K\ v^2/(2g)$) for headloss calculations was determined to be 1.04 as shown in Figure 3.

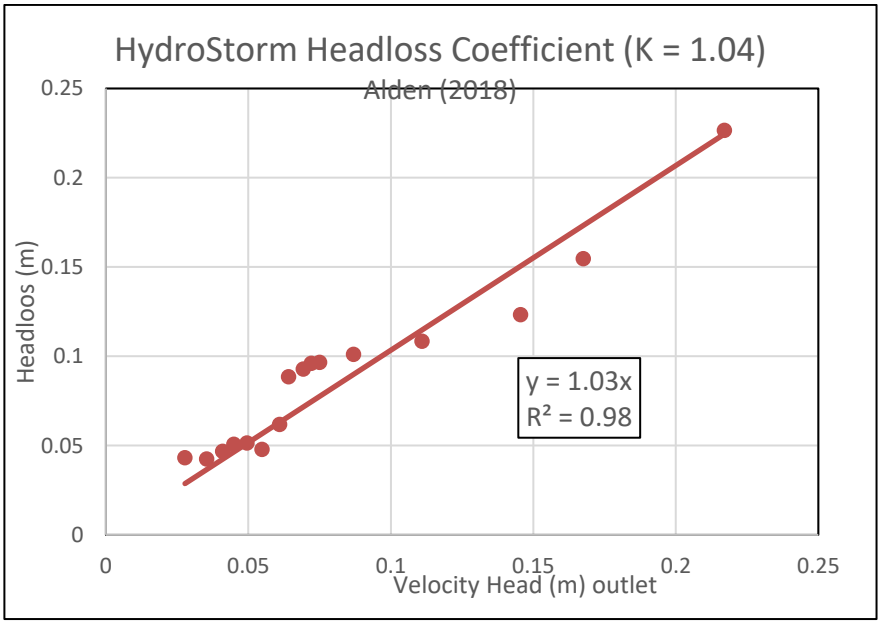


Figure 3. HydroStorm Headloss K Factor (1.04)

Inspection

Procedure

Floatables

A visual inspection can be conducted for floatables by removing the covers and looking down into the center access tube of the separator. Separators with an inlet grate (HS 4i or custom separator) will have a plastic funnel located under the grate that must be removed from the frame prior to inspection or maintenance. If you are missing a funnel please contact Hydroworks at the numbers provided at the end of this document.

TSS/Sediment

Inspection for TSS build-up can be conducted using a Sludge Judge®, Core Pro®, AccuSludge® or equivalent sampling device that allows the measurement of the depth of TSS/sediment in the unit. These devices typically have a ball valve at the bottom of the tube that allows water and TSS to flow into the tube when lowering the tube into the unit. Once the unit touches the bottom of the device, it is quickly pulled upward such that the water and TSS in the tube forces the ball valve closed allowing the user to see a full core of water/TSS in the unit. The unit should be inspected for TSS through each of the access covers. Several readings (2 or 3) should be made at each access cover to ensure that an accurate TSS depth measurement is recorded.

Frequency

Construction Period

The HydroStorm separator should be inspected every four weeks and after every large storm (over 0.5” (12.5 mm) of rain) during the construction period.

Post-Construction Period

The Hydroworks HydroStorm separator should be inspected during the first year of operation for normal stabilized sites (grassed or paved areas). If the unit is subject to oil spills or runoff from unstabilized (storage piles, exposed soils) areas the HydroStorm separator should be inspected more frequently (4 times per year). The initial annual inspection will indicate the required future frequency of inspection and maintenance if the unit was maintained after the construction period.

Reporting

Reports should be prepared as part of each inspection and include the following information:

1. Date of inspection
2. GPS coordinates of Hydroworks unit
3. Time since last rainfall
4. Date of last inspection
5. Installation deficiencies (missing parts, incorrect installation of parts)
6. Structural deficiencies (concrete cracks, broken parts)
7. Operational deficiencies (leaks, blockages)
8. Presence of oil sheen or depth of oil layer
9. Estimate of depth/volume of floatables (trash, leaves) captured
10. Sediment depth measured
11. Recommendations for any repairs and/or maintenance for the unit
12. Estimation of time before maintenance is required if not required at time of inspection

A sample inspection checklist is provided at the end of this manual.

Maintenance

Procedure

The Hydroworks HydroStorm unit is typically maintained using a vacuum truck. There are numerous companies that can maintain the HydroStorm separator. Maintenance with a vacuum truck involves removing all of the water and sediment together. The water is then separated from the sediment on the truck or at the disposal facility.

A central access opening (24” (600 mm) or greater) is provided to the gain access to the lower treatment tank of the unit. This is the primary location to maintain by vacuum truck. The pretreatment area can also be vacuumed and/or flushed into the lower treatment tank of the separator for cleaning via the central access once the water level is lowered below the pretreatment floor.

In instances where a vacuum truck is not available other maintenance methods (i.e. clamshell bucket) can be used, but they will be less effective. If a clamshell bucket is used the water must be decanted prior to cleaning since the sediment is under water and typically fine in nature.

The local municipality should be consulted for the allowable disposal options for both water and sediments prior to any maintenance operation. Once the water is decanted the sediment can be removed with the clamshell bucket.

Disposal of the contents of the separator depend on local requirements. Maintenance of a Hydroworks HydroStorm unit will typically take 1 to 2 hours based on a vacuum truck and longer for other cleaning methods (i.e. clamshell bucket).

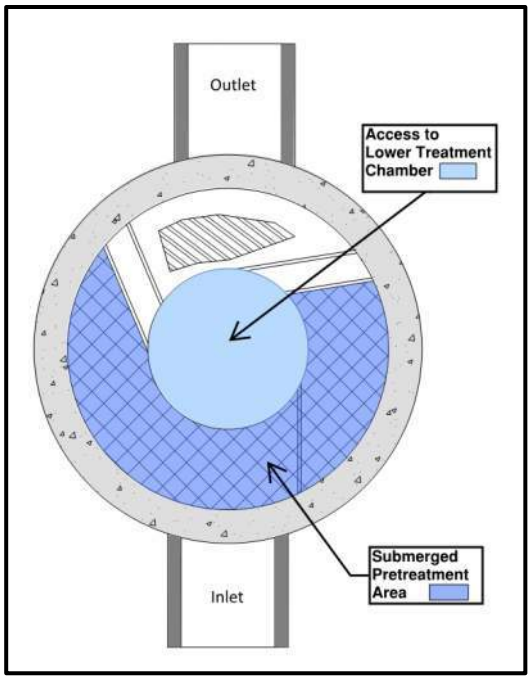


Figure 3. Maintenance Access

Frequency

Construction Period

A HydroStorm separator can fill with construction sediment quickly during the construction period. The HydroStorm must be maintained during the construction period when the depth of TSS/sediment reaches 24” (600 mm). It must also be maintained during the construction period if there is an appreciable depth of oil in the unit (more than a sheen) or if floatables other than oil cover over 50% of the area of the separator

The HydroStorm separator should be maintained at the end of the construction period, prior to operation for the post-construction period.

Post-Construction Period

The HydroStorm was independently tested by Alden Research Laboratory in 2017. A HydroStorm HS 4 was tested for scour with a 50% sediment depth of 0.5 ft.(150 mm). The sump depths given in Table 1 are scaled larger than required based on standard scaling requirements (NJDEP, ETV Canada). Accordingly maintenance depths for units larger than the HS 4 will be larger than 300 mm.

There will be designs with increased sediment storage based on specifications or site-specific criteria. A measurement of the total depth in the separator through the central access tube should be taken and compared to sump depth given in Table 1.

The standard sump depth from Table 1 should be subtracted from the measured depth and the resulting extra depth should be added to the values given in Table 2 to determine the site-specific sediment maintenance depth for that separator.

For example, if the measured sump depth in the HS-7 is 7.5 feet, then the sediment maintenance depth for that HS-7 is 2.25 ft (= 0.5 + 1.75) and the separator does not need to be cleaned for sediment accumulation until the measure sediment depth is 2.25 ft.

The HydroStorm separator must also be maintained if there is an appreciable depth of oil in the unit (more than a sheen) or if floatables other than oil cover over 50% of the water surface of the separator.

Table 2 Standard Maintenance Depths for HydroStorm Models

Model	Diameter ft (mm)	Sediment Maintenance Depth for Total Water Depth ft (mm)*
HS-3	3 (900)	1 (300)
HS-4	4 (1200)	1 (300)
HS-5	5 (1500)	1.75 (530)
HS-6	6 (1800)	2 (610)
HS-7	7 (2100)	1.75 (535)
HS-8	8 (2400)	1.5 (465)
HS-9	9 (2700)	1.75 (540)
HS-10	10 (3000)	2 (615)
HS-12	12 (3600)	1.5 (470)

*based on standard sump depths in Table 1

HYDROSTORM INSPECTION SHEET

Date _____
Date of Last Inspection _____

Site _____
City _____
State _____
Owner _____

GPS Coordinates _____

Date of last rainfall _____

Site Characteristics	**Yes**	**No**
Soil erosion evident	☐	☐
Exposed material storage on site	☐	☐
Large exposure to leaf litter (lots of trees)	☐	☐
High traffic (vehicle) area	☐	☐

HydroStorm	**Yes**	**No**
Obstructions in the inlet or outlet	☐ *	☐
Missing internal components	☐ **	☐
Improperly installed inlet or outlet pipes	☐ ***	☐
Internal component damage (cracked, broken, loose pieces)	☐ **	☐
Floating debris in the separator (oil, leaves, trash)	☐	☐
Large debris visible in the separator	☐ *	☐
Concrete cracks/deficiencies	☐ ***	☐
Exposed rebar	☐ **	☐
Water seepage (water level not at outlet pipe invert)	☐ ***	☐

Water level depth below outlet pipe invert _____"

Routine Measurements

Floating debris depth	**< 0.5" (13mm)**	☐	**>0.5" 13mm)**	☐ *
Floating debris coverage	**< 50% of surface area**	☐	**> 50% surface area**	☐ *
Sludge depth	**< 12" (300mm)**	☐	**> 12" (300mm)**	☐ *

* Maintenance required
** Repairs required
*** Further investigation is required

Hydroworks

Other Comments:

Hydroworks® HydroStorm

One Year Limited Warranty

Hydroworks, LLC warrants, to the purchaser and subsequent owner(s) during the warranty period subject to the terms and conditions hereof, the Hydroworks HydroStorm to be free from defects in material and workmanship under normal use and service, when properly installed, used, inspected and maintained in accordance with Hydroworks written instructions, for the period of the warranty. The standard warranty period is 1 year.

The warranty period begins once the separator has been manufactured and is available for delivery. Any components determined to be defective, either by failure or by inspection, in material and workmanship will be repaired, replaced or remanufactured at Hydroworks' option provided, however, that by doing so Hydroworks, LLC will not be obligated to replace an entire insert or concrete section, or the complete unit. This warranty does not cover shipping charges, damages, labor, any costs incurred to obtain access to the unit, any costs to repair/replace any surface treatment/cover after repair/replacement, or other charges that may occur due to product failure, repair or replacement.

This warranty does not apply to any material that has been disassembled or modified without prior approval of Hydroworks, LLC, that has been subjected to misuse, misapplication, neglect, alteration, accident or act of God, or that has not been installed, inspected, operated or maintained in accordance with Hydroworks, LLC instructions and is in lieu of all other warranties expressed or implied. Hydroworks, LLC does not authorize any representative or other person to expand or otherwise modify this limited warranty.

The owner shall provide Hydroworks, LLC with written notice of any alleged defect in material or workmanship including a detailed description of the alleged defect upon discovery of the defect. Hydroworks, LLC should be contacted at 136 Central Ave., Clark, NJ 07066 or any other address as supplied by Hydroworks, LLC. (888-290-7900).

This limited warranty is exclusive. There are no other warranties, express or implied, or merchantability or fitness for a particular purpose and none shall be created whether under the uniform commercial code, custom or usage in the industry or the course of dealings between the parties. Hydroworks, LLC will replace any goods that are defective under this warranty as the sole and exclusive remedy for breach of this warranty.

Subject to the foregoing, all conditions, warranties, terms, undertakings or liabilities (including liability as to negligence), expressed or implied, and howsoever arising, as to the condition, suitability, fitness, safety, or title to the Hydroworks HydroStorm are hereby negated and excluded and Hydroworks, LLC gives and makes no such representation, warranty or undertaking except as expressly set forth herein. Under no circumstances shall Hydroworks, LLC be liable to the Purchaser or to any third party for product liability claims; claims arising from the design, shipment, or installation of the HydroStorm, or the cost of other goods or services related to the purchase and installation of the HydroStorm. For this Limited Warranty to apply, the HydroStorm must be installed in accordance with all site conditions required by state and local codes; all other applicable laws; and Hydroworks' written installation instructions.

Hydroworks, LLC expressly disclaims liability for special, consequential or incidental damages (even if it has been advised of the possibility of the same) or breach of expressed or implied warranty. Hydroworks, LLC shall not be liable for penalties or liquidated damages, including loss of production and profits; labor and materials; overhead costs; or other loss or expense incurred by the purchaser or any third party. Specifically excluded from limited warranty coverage are damages to the HydroStorm arising from ordinary wear and tear; alteration, accident, misuse, abuse or neglect; improper maintenance, failure of the product due to improper installation of the concrete sections or improper sizing; or any other event not caused by Hydroworks, LLC. This limited warranty represents Hydroworks' sole liability to the purchaser for claims related to the HydroStorm, whether the claim is based upon contract, tort, or other legal basis.

VERIFICATION STATEMENT

GLOBE Performance Solutions

Verifies the performance of

Hydroworks® HydroStorm (HS) Hydrodynamic Separator

Developed by Hydroworks, LLC
Clark, NJ, USA

In accordance with

ISO 14034:2016

Environmental management — Environmental technology verification (ETV)

John D. Wiebe, PhD
Executive Chairman
GLOBE Performance Solutions

May 15, 2018
Vancouver, BC, Canada

Verification Body
GLOBE Performance Solutions
404 – 999 Canada Place | Vancouver, B.C | Canada |V6C 3E2

Technology description and application

The Hydroworks® HydroStorm (HS) Hydrodynamic Separator is a concrete cylindrical device with an annular pre-treatment channel, an inner chamber, and lower collection sump. A schematic of the HS 4 test unit is shown in Figure 1. The pre-treatment channel extends below the outlet pipe invert and contains three intermediate low-flow weirs (flush with the outlet invert), and two downstream higher bypass weirs that extend above the outlet invert. The higher weirs bypass high flows to prevent oil and solids from being scoured out of the separator.

As water enters the unit through one or more inlets, coarser solids immediately start to settle below a horizontal grate extending from the inlet to two sets of lower weirs near the outlet pipe. The grating is positioned over the pre-treatment channel to help displace the inflow turbulence and protect the captured sediment from scour. Openings are located on the horizontal plate upstream of each weir to allow the flow to be conveyed into the inner chamber and lower sump. The weirs are positioned to create a counter clockwise rotation of water in the inner chamber to minimize turbulence and maximize settling. After water spirals down the inner chamber to the main settling chamber towards the floor of the separator where it deposits suspended sediments, it flows upwards between the wall of the unit and the outer edge of the disk extended from the inner chamber and through an arced opening at the bottom of the pre-treatment disk, downstream of the bypass weirs, where it is conveyed into the outlet pipe. An annular secondary horizontal plate with 32% of open-perforations is located within the lower sump to protect the collected sediment from scour. Oil and light liquids enter the inner chamber through the holes, reaching the bottom of the pre-treatment area and rises to the top of the water level where they are trapped.

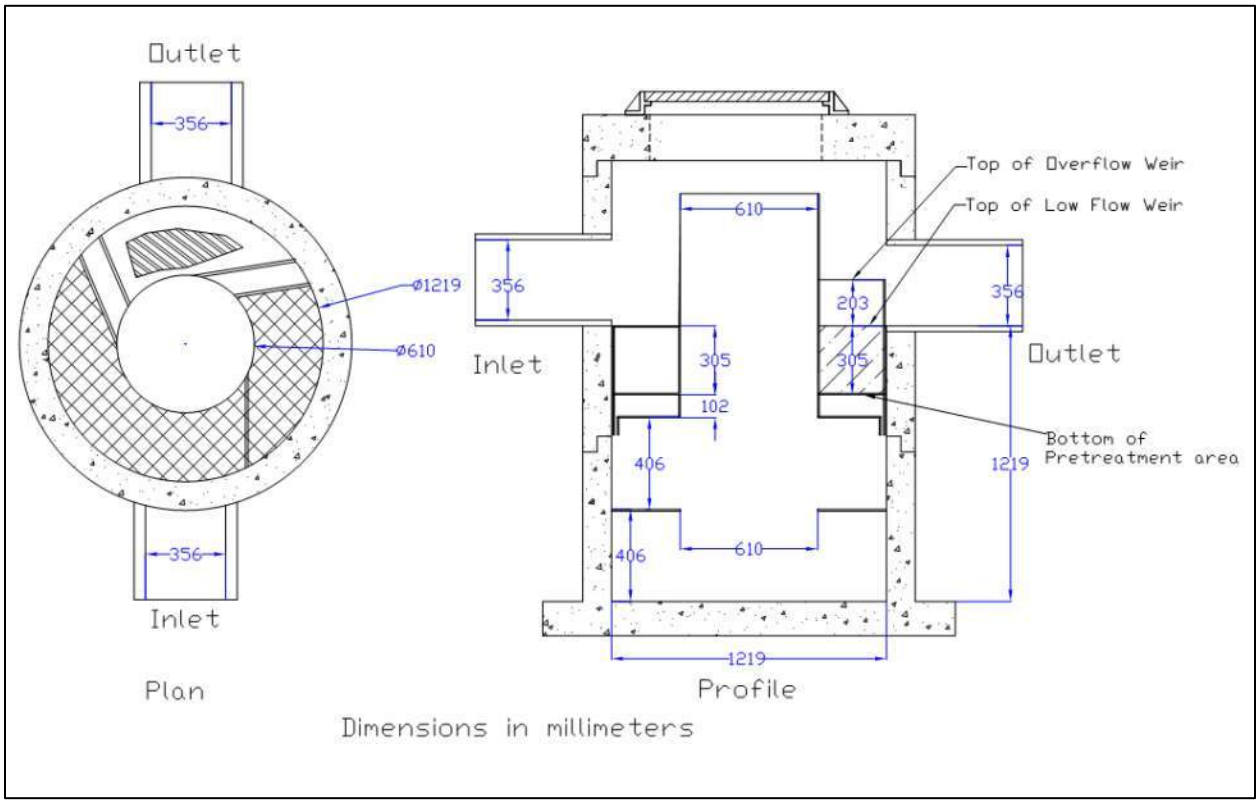


Figure 1: Schematic of the Hydroworks® HS4 Hydrodynamic Separator treatment unit tested as part of this verification.

Performance conditions

The data and results published in this Technology Fact Sheet were obtained from the testing program conducted on the Hydroworks® HS4 Hydrodynamic Separator, in accordance with the *Procedure for Laboratory Testing of Oil-Grit Separators (Version 3.0, June 2014)*. The Procedure was prepared by the Toronto and Region Conservation Authority (TRCA) for the Canadian Environmental Technology Verification Program. A copy of the Procedure may be accessed on the Canadian ETV website at www.etvcanada.ca.

Performance claim(s)

Capture test[1]:

During the capture test, the Hydroworks® HS Hydrodynamic Separator, with a false floor set to 50% of the manufacturer's recommended maximum sediment storage depth and a constant influent test sediment concentration of 200 mg/L, removes 69, 64, 60, 56, 46, 41, and 36 percent of influent sediment by mass at surface loading rates of 40, 80, 200, 400, 600, 1000, and 1400 L/min/m^2, respectively.

Scour test[1]:

During the scour test, the Hydroworks® HS Hydrodynamic Separator, with 10.2 cm (4 inches) of test sediment pre-loaded onto a false floor reaching 50% of the manufacturer's recommended maximum sediment sump storage depth and sediment loaded onto the pre-treatment channel emulating depositional pattern of the 40 L/min/m^2 capture test, generate corrected effluent concentrations of 22.4, 28.5, 20.0, 19.1, and 24.4 mg/L at 5-minute duration surface loading rates of 200, 800, 1400, 2000, and 2600 L/min/m^2, respectively.

Light liquid re-entrainment test[1]:

During the light liquid re-entrainment test, the Hydroworks® HS Hydrodynamic Separator with surrogate low-density polyethylene beads preloaded within the inner chamber, representing a floating light liquid volume equal to a depth of 50.8 mm over the sedimentation area, retains 100, 99.9, 95.4, 95.7, and 97.5 percent of loaded beads by mass during the 5-minute duration surface loading rates of 200, 800, 1400, 2000, and 2600 L/min/m^2, respectively.

Performance results

The test sediment consisted of ground silica (1 – 1000 micron) with a specific gravity of 2.65, uniformly mixed to meet the particle size distribution specified in the testing procedure. The *Procedure for Laboratory Testing of Oil Grit Separators* requires that the three sample average of the test sediment particle size distribution (PSD) meet the specified PSD percent less than values within a boundary threshold of 6%. The comparison of the average test sediment PSD to the CETV specified PSD in Figure 2indicates that the test sediment used for the capture and scour tests met this condition.

[1] The claim can be applied to other units smaller or larger than the tested unit as long as the untested units meet the scaling rule specified in the Procedure for Laboratory of Testing of Oil Grit Separators (Version 3.0, June 2014)

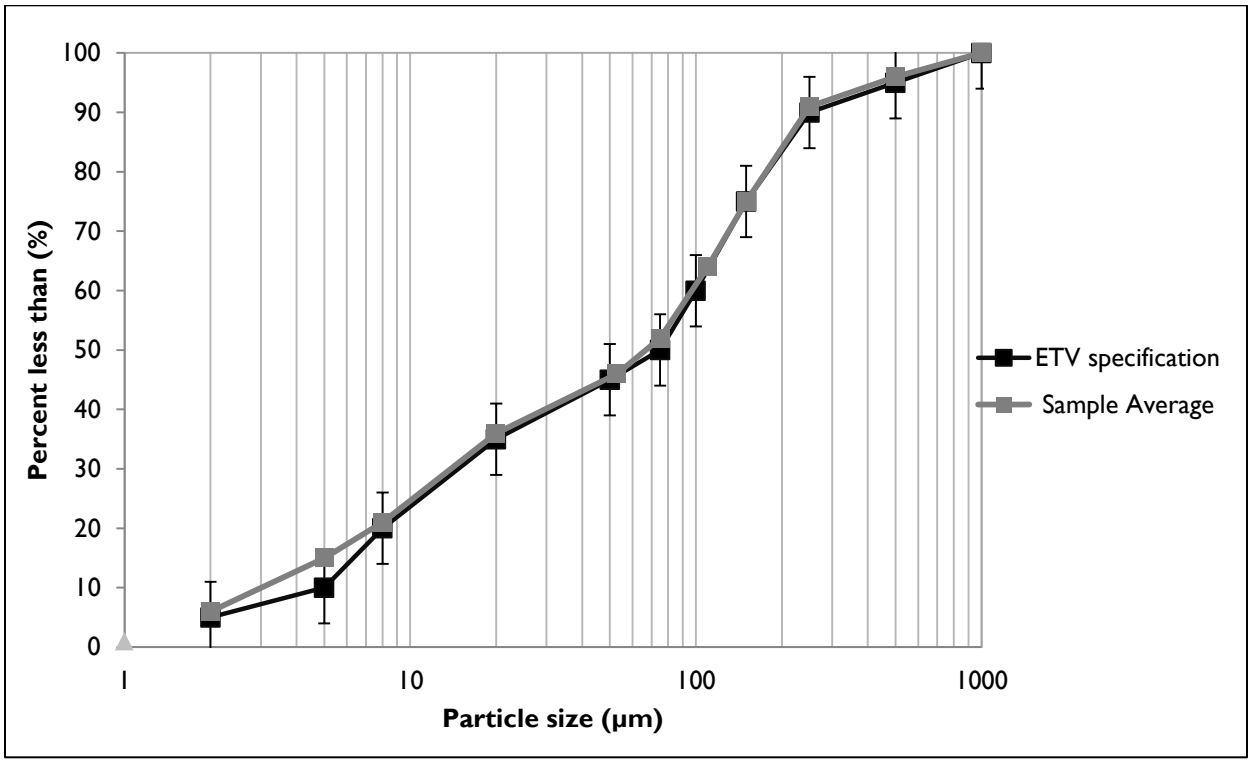


Figure 2. The three sample average particle size distribution (PSD) of the test sediment used for the capture and scour test compared to the specified PSD.

The capacity of the device to retain sediment was determined at seven surface loading rates using the modified mass balance method. This method involved measuring the mass and particle size distribution of the injected and retained sediment for each test run. Performance was evaluated with a false floor at 0.15 m from the bottom, simulating the technology filled to 50% of the manufacturer's recommended maximum sediment storage depth. The test was carried out with clean water that maintained a sediment concentration below 20 mg/L. Based on these conditions, removal efficiencies for individual particle size classes and for the test sediment as a whole were determined for each of the tested surface loading rates (Table 1).

In some instances, the removal efficiencies were above 100% for certain particle size fractions. These discrepancies are not unique to any one test laboratory and may be attributed to errors relating to the blending of sediment, collection of representative samples for laboratory submission, and laboratory analysis of PSD. Due to these errors, caution should be exercised in applying the removal efficiencies by particle size fraction for the purposes of sizing the tested device (see Bulletin # CETV 2016-11-0001). The results for "all particle sizes by mass balance" (see Table 1 and 2) are based on measurements of the total injected and retained sediment mass, and are therefore not subject to blending, sampling or PSD analysis errors.

Table 1. Removal efficiencies (%) of the HS4 unit at specified surface loading rates.

Particle size fraction (µm)	Surface loading rate (L/min/m²)						
	40	80	200	400	600	1000	1400
>500	73	100*	98	67	100*	100*	26
250 - 500	100	100*	92	64	100*	98	48
150 - 250	100*	75	89	72	89	60	69
105 - 150	94	100*	100*	100*	78	99	91
75 - 105	96	76	79	95	68	54	46
53 - 75	87	100*	100*	100*	56	69	65
20 - 53	71	54	46	44	19	14	10
8 - 20	38	23	15	8	2	2	2
5 – 8	13	6	1	1	0	0	0
<5	8	0	0	0	0	0	0
All particle sizes by mass balance	**68.6**	**64.0**	**60.0**	**56.1**	**46.1**	**41.2**	**35.7**

* Removal efficiencies were calculated to be above 100%. Calculated values ranged between 103 and 194% (average 128%). See text and Bulletin # CETV 2016-11-0001 for more information.

Figure 3 compares the particle size distribution (PSD) of the three sample average of the test sediment to the PSD of the sediment retained by the HS4 unit at each of the tested surface loading rates. As expected, the capture efficiency for fine particles in the unit was generally found to decrease as surface loading rates increased.

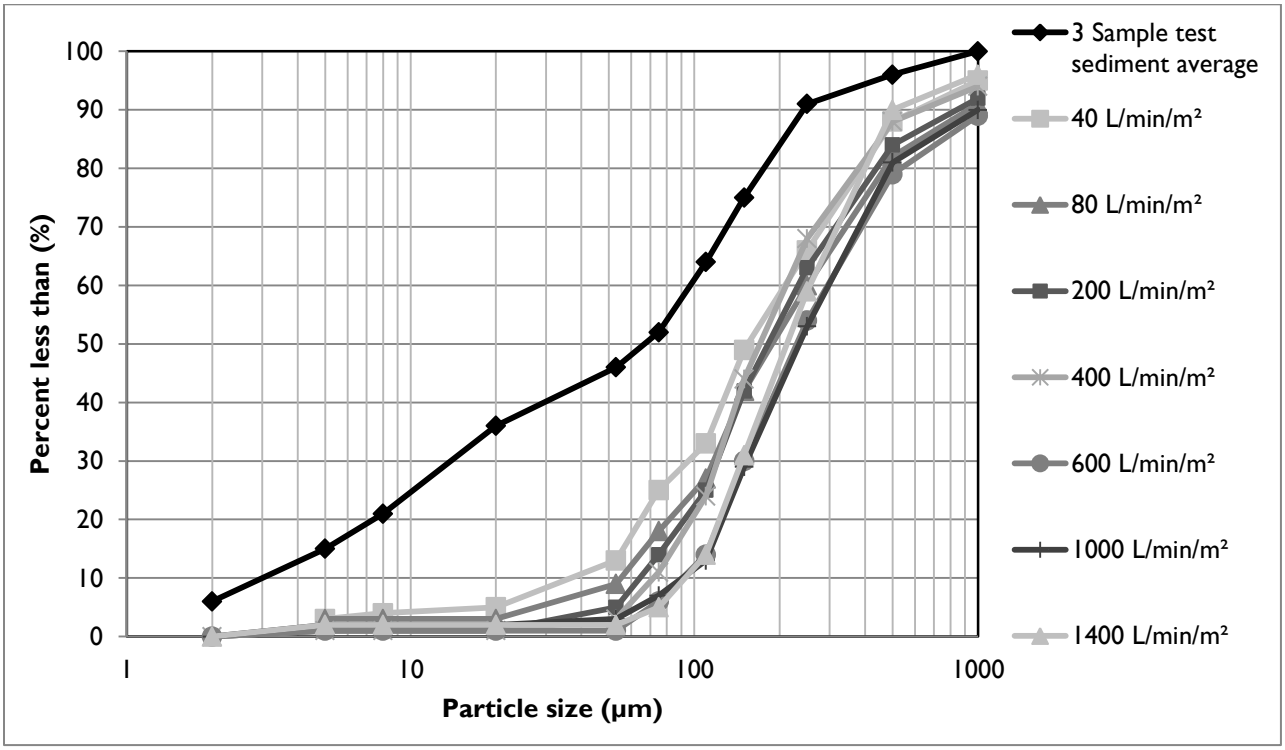


Figure 3. Particle size distribution of sediment retained in the HS4 unit in relation to the injected test sediment average.

For the sediment scour and re-suspension test, two tests were conducted. The first test was conducted with the secondary plate used in the capture tests. The second used a perforated secondary plate. Since sediment during the capture tests was found to settle in the pre-treatment channel, and in roughly the same quantities on the secondary plate and collection sump, all three of these surfaces were preloaded with sediment during the first test. The pre-treatment channel only captures coarse sediment. Therefore, this area was pre-loaded with sediment having a PSD similar to the PSD of the sediment that settled in this area during the 40 L/min/m^2 SLR sediment capture test. The pre-loaded sediment in the pre-treatment channel was shaped and leveled to correspond with sedimentation patterns and depths observed by the laboratory technician during the 40 L/min/m^2 SLR capture test. It should be noted that the actual sediment preloaded in this area was finer than the PSD of sediment captured in the same area during the 40 L/min/m^2 SLR capture test, particularly for particle sizes less than the median size. Both the sump and secondary plate were pre-loaded with the 1-1000 µm sediment mix to a depth of 10.2 cm. The preloaded sediment in the lower sump was placed on a false floor to mimic a device filled to 50% of the manufacturer's maximum recommended sediment storage depth.

After pre-loading the sediment, clean water was run through the device at five SLRs over a 25 minute period. At each SLR, five effluent samples were collected over a four minute interval (one per minute) with the first sample collected at the beginning of each flow rate, and the last collected just prior to the one minute transition to the next flow rate or end of the test. Effluent samples were analyzed for Suspended Sediment Concentration (SSC) and PSD by methods prescribed in the *Procedure*. The effluent samples were subsequently adjusted based on the background concentration of the influent water and the smallest 5% of particles captured during the 40 L/min/m^2 sediment capture test (7 um), as per the method described in Bulletin # CETV 2016-09-0001.

Measurements of sediment depths in the sump after the first test showed that most of the sediment from the secondary plate was carried into the lower sump. During this process, the fine sediment was likely re-suspended and carried out of the unit with the flow. The average adjusted effluent suspended sediment concentrations for each SLR ranged from 11.3 mg/L at the 200 L/min/m2 SLR to 196.7 mg/L at the 1400 L/min/m2 SLR. Effluent SSCs declined after the 1400 L/min/m2 SLR because the unit begins to bypass flow at this rate. It should be noted that this was a very conservative test as sediment was preloaded in three areas, rather than in the lower sump alone, and the preloaded sediment on the pre-treatment channel and secondary plate had a finer PSD than the sediment found to settle in these areas during the lowest SLR capture test.

The second sediment scour test was conducted on an identical unit but with a 32% open-area perforated secondary plate of the same size and orientation as the solid plate used in the first test. The perforated plate was intended to allow most of the sediment to settle in the lower sump, while still protecting against sediment scour, and not affecting the capacity of the unit to capture sediment. A second capture test was run at the 600 L/min/m^2 SLR to confirm that the perforated plate would have the same flow characteristics and removal efficiencies as the solid plate. Results of this comparison presented in Table 2 show that removal efficiencies were not affected and that the collection sump was receiving the majority of sediment transported into the lower chamber. Based on the observed sediment deposition zones, the second repeat test with the perforated plate had sediment preloaded in the pre-treatment channel and the lower collection sump only (*i.e.* the major deposition zones). The collection sump was preloaded with 10.2 cm of the 1- 1000 µm test sediment mix, as in the first test, and the pre-treatment channel was preloaded in much the same way as the first test, but with a sediment PSD that more closely mimicked the PSD of sediment observed to settle in this area during the 40 L/min/m^2 sediment capture test.

Table 2: Injected mass captured at the 600 L/min/m^2 SLR for two different configurations of the secondary plate

Secondary Plate type	Target Surface Loading Rate (L/min/m^2)	Tested Flow Rate (L/min)	Removal Efficiency (%)	Pre-treatment Channel (%)	Secondary Plate (%)	Outlet Dispersion Plate (%)	Collection Sump (%)
Solid Plate	600	736.2	46.1	24.7	8.5	3.1	9.9
Perforated Plate	600	740.9	45.9	25.8	2.7	3.0	14.5

Results of the second test are presented in Table 3. Background concentrations were maintained below 10.5 mg/L. The average adjusted effluent suspended sediment concentrations ranged from 19.1 to 28.5 mg/L. Since the commercially available unit will have a perforated secondary plate, these concentrations are the appropriate values to consider for approvals. The verifier acknowledges that the sediment capture removal efficiencies were not all tested with the perforated plate (see variance notes below), but that the repeat test results at the 600 L/min/m^2 SLR and a statement from the independent test laboratory were sufficient to provide reasonable confidence that the added perforations in the secondary plate would have negligible influence on sediment removal efficiencies.

Table 3. Scour test adjusted effluent sediment concentrations

Run	Surface loading rate (L/min/m^2)	Run time (min)	Background sample concentration (mg/L)[a]	Average adjusted effluent suspended sediment concentration (mg/L)[b]
1	200	5	3.6	22.4
2	800	5	8.9	28.5
3	1400	5	7.6	20.0
4	2000	5	10.4	19.1
5	2600	5	6.0	24.4

[a] Background concentrations shown here are approximate values based on graphical interpolation

[b] The adjusted effluent suspended sediment concentration represents the actual measured effluent concentration minus the background concentration. For more information see Bulletin # CETV 2016-09-0001. Adjusted concentrations were only calculated for the average of the five samples collected per surface loading rate.

The results of the light liquid re-entrainment test used to evaluate the unit's capacity to prevent re-entrainment of light liquids are reported in Table 4. The test involved preloading 58.3 L (corresponding to a 5 cm depth over the collection sump area of 1.17m^2) of surrogate low-density polyethylene beads (Dow Chemical Dowlex™ 2517) within the inner chamber and running clean water through the device continuously at five surface loading rates (200, 800, 1400, 2000, and 2600 L/min/m^2). Each flow rate was maintained for 5 minutes with approximately 1 minute transition time between flow rates (30 minutes total). The effluent flow was screened to capture all re-entrained pellets throughout the test. Results showed maximum re-entrainment of 4.6% at 1400 L/min/m^2, which is the highest SLR without bypass. Re-entrainment decreased at subsequent SLRs as bypass volumes increased.

Table 4. Light liquid re-entrainment test results for the HS4

Surface Loading Rate (L/min/m²)	Time Stamp (min)	Amount of Beads Re-entrained			
		Mass (g)	Volume (L)	% of Pre-loaded Mass Re-entrained	% of Pre-loaded Mass Retained
200	1:00 – 6:00	0	0	0.00	100
800	7:00 – 12:00	49	0.1	0.1	99.9
1400	13:00 – 18:00	1523	2.7	4.6	95.4
2000	19:00 – 24:00	1445	2.5	4.3	95.7
2600	25:00 – 30:00	847	1.5	2.5	97.5
Interim Collection Net		39	0.1	0.1	99.9
Total Re-entrained		3902	6.8	11.7	--
Total Retained		29,497	51.5	--	88.3
Total Loaded		33,399	58.3	--	--

Variances from testing Procedure

The following deviations from the *Procedure for Laboratory Testing of Oil-Grit Separators* (Version 3.0, June 2014) have been noted:

1. The Procedure stipulates that the tested device "must be a full scale, commercially available device with the same configuration and components that would be typical for an actual installation." As noted above, the sediment capture tests were conducted with a solid secondary plate. The solid secondary plate was later modified to a 32% open area perforated plate to reduce sediment settling on the plate, while continuing to provide scour prevention. As described above, the scour test was repeated with the perforated secondary plate, but the sediment capture test was only repeated at the 600 L/min/m² SLR (i.e. one of seven tested SLRs). Removal efficiency results for the repeat test showed very close correspondence with the earlier test using the solid plate and much of the sediment that previously settled on the secondary plate was deposited in the lower collection sump (see Table 2). The independent laboratory provided the following statement regarding the potential for the added perforations to affect sediment removal efficiencies: "Taking into account the close proximity of the plate to the collection sump, as well as our knowledge of sediment transport, it is expected that the deposited sediment would have settled in the lower sump, with no impact on removal efficiency, if the plate was removed." While the verifier acknowledges that stronger evidence would have been provided by additional repeat testing at a lower and higher SLR, the close correlation between the original and repeat test, combined with the statement from the lab were sufficient to provide reasonable confidence that adding the perforations would not likely have changed the capture test results significantly.

2. The repeat test at the 600 L/min/m² SLR had background concentrations exceeding the 20 mg/L threshold during the last half of the test. The exceedances occurred in 4 of the 8 samples collected, reaching a maximum of 28.4 mg/L. The experimental apparatus is a closed loop system. Therefore, the sediment in the background samples consists of fine particles not captured by the device, and would therefore not likely bias the mass balance results.

3. It was necessary to change flow meters during the sediment scour and light liquid re-entrainment test, as the required flows exceeded the minimum and/or maximum range of any single meter. When the flow capacity of the selected meter was reached, the flow was shut down over a period of approximately 10 seconds and all flow data saved. The next data acquisition file was executed and flow increased at a rate that corresponded to reaching each previous target flow after a period of 1-minute. This procedure was approved by CETV prior to testing, in recognition that most particles susceptible to scour at low flows would not be in the sump at higher flows. Similarly, re-entrainment of the oil beads was not expected to be significantly affected by the flow meter change.

4. As part of the capture test, evaluation of the 40 and 80 L/min/m^2 surface loading rate was split into 3 and 2 parts, respectively, due to the long duration needed to feed the required minimum of 11.3 kg of test sediment into the unit. At the end of the first and second parts of the test, the flow rates were gradually shutdown to prevent capture of particles that would have been washed out under normal circumstances. The amended procedure was reviewed and approved by the verifier prior to testing.

Verification

The verification was completed by the Verification Expert, Toronto and Region Conservation Authority, contracted by GLOBE Performance Solutions, using the International Standard ***ISO 14034:2016 Environmental management -- Environmental technology verification (ETV)***. Data and information provided by Hydroworks, LLC to support the performance claim included the following: Performance test report prepared by Alden Research Laboratory, Inc., and dated February 2018. This report is based on testing completed in accordance with the *Procedure for Laboratory Testing of Oil-Grit Separators* (Version 3.0, June 2014).

What is ISO14034:2016 Environmental management – Environmental technology verification (ETV)?

ISO 14034:2016 specifies principles, procedures and requirements for environmental technology verification (ETV), and was developed and published by the *International Organization for Standardization (ISO)*. The objective of ETV is to provide credible, reliable and independent verification of the performance of environmental technologies. An environmental technology is a technology that either results in an environmental added value or measures parameters that indicate an environmental impact. Such technologies have an increasingly important role in addressing environmental challenges and achieving sustainable development.

For more information on the Hydroworks® HS Hydrodynamic Separator please contact:

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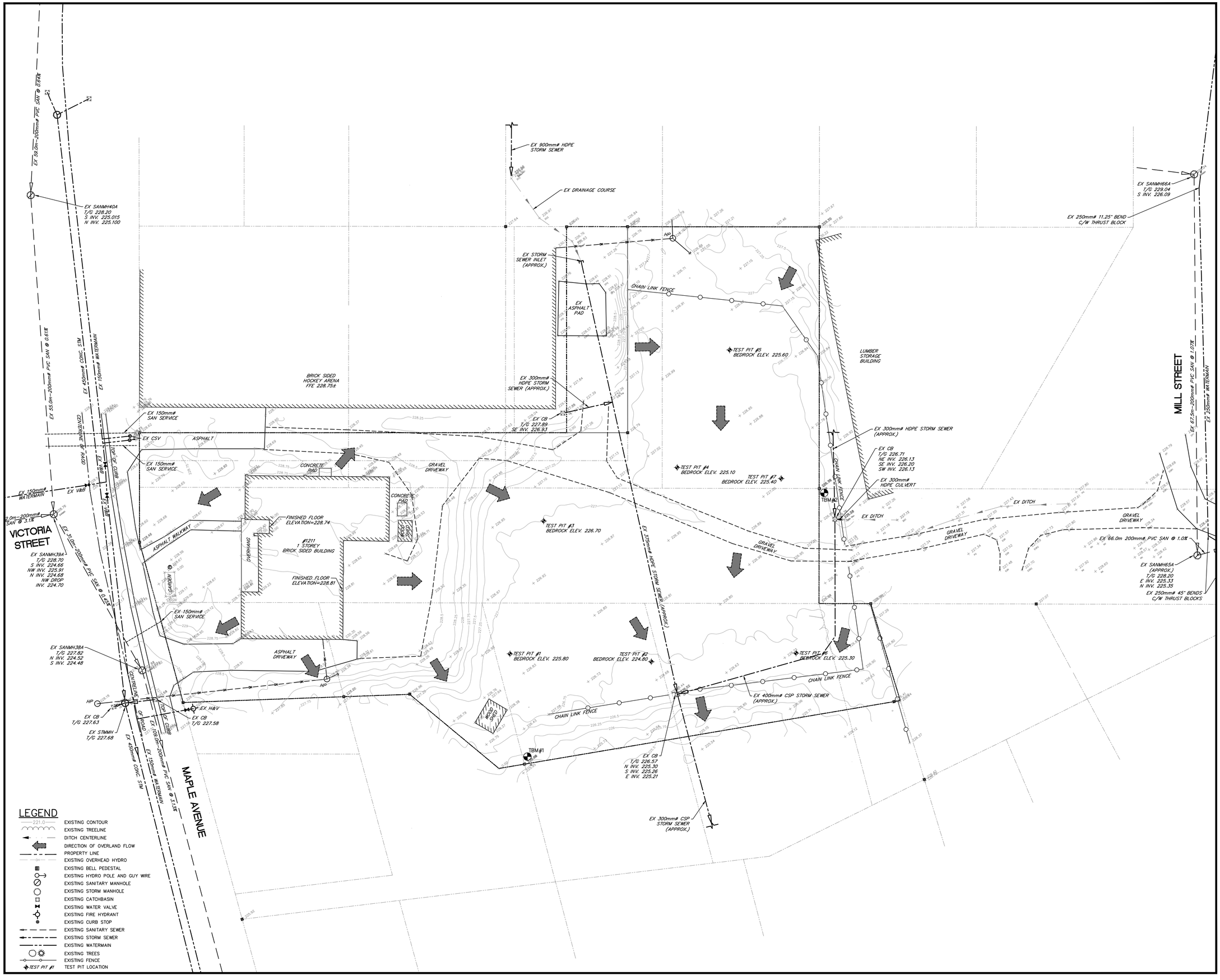
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APPENDIX E

Conceptual Drawings



LEGEND

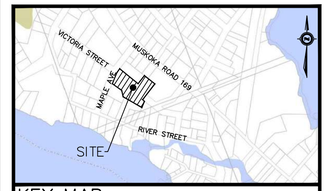
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- EXISTING TREELINE
- DITCH CENTERLINE
- DIRECTION OF OVERLAND FLOW
- PROPERTY LINE
- EXISTING OVERHEAD HYDRO
- EXISTING BELL PEDESTAL
- EXISTING HYDRO POLE AND GUY WIRE
- EXISTING SANITARY MANHOLE
- EXISTING STORM MANHOLE
- EXISTING CATCHBASIN
- EXISTING WATER VALVE
- EXISTING FIRE HYDRANT
- EXISTING CURB STOP
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING WATERMAIN
- EXISTING TREES
- EXISTING FENCE
- TEST PIT #1 — TEST PIT LOCATION

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KEY MAP

NOTES

1. TOPOGRAPHIC SURVEY COMPLETED BY RUDY MAK SURVEYING LTD., DATED OCTOBER 16, 2025.
2. SITE PLAN PROVIDED BY WZMH ARCHITECTS, DATED APRIL 16, 2026.

BENCHMARK

TBM#1
SITE BENCHMARK IS THE TOP OF THE IB LOCATED ON THE WESTERN LOT LINE OF LOT 81.
ELEVATION 226.05

TBM#2
SITE BENCHMARK IS THE TOP OF THE SSIB LOCATED ON THE SOUTH EAST CORNER OF LOT 98.
ELEVATION 226.78

NO.	YY.MM.DD	REVISION	BY

SEAL

NORTH ARROW

DESIGN BY:	J.V.
DRAWN BY:	C.A.
CHECKED	J.V.
DATE:	APRIL 2026
SCALE:	1: 300

CLIENT/PROJECT

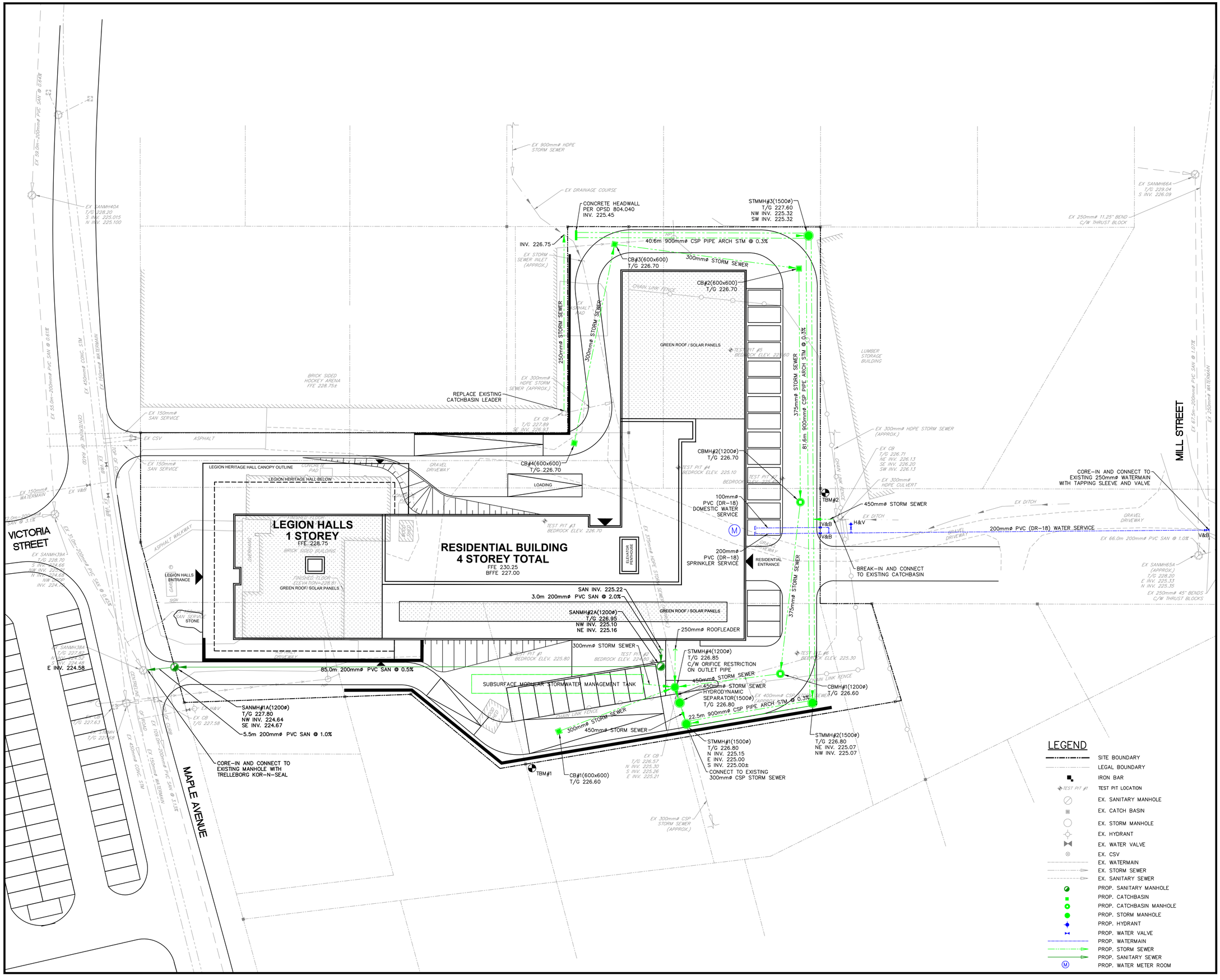
ROYAL CANADIAN LEGION
BALA LEGION HERITAGE MANOR
1011 MAPLE AVENUE, BALA
TOWNSHIP OF MUSKOKA LAKES

DRAWING TITLE

EXISTING CONDITIONS PLAN

PROJECT NO.	DRAWING NO.	REVISION
26-11893M	EX-1	0

EX-1



LEGEND

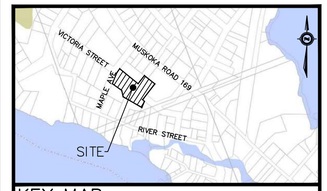
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- LEGAL BOUNDARY
- IRON BAR
- TEST PIT #1 — TEST PIT LOCATION
- EX. SANITARY MANHOLE
- EX. CATCH BASIN
- EX. STORM MANHOLE
- EX. HYDRANT
- EX. WATER VALVE
- EX. CSV
- EX. WATERMAIN
- EX. STORM SEWER
- EX. SANITARY SEWER
- PROP. SANITARY MANHOLE
- PROP. CATCHBASIN
- PROP. CATCHBASIN MANHOLE
- PROP. STORM MANHOLE
- PROP. HYDRANT
- PROP. WATER VALVE
- PROP. WATERMAIN
- PROP. STORM SEWER
- PROP. SANITARY SEWER
- (M) PROP. WATER METER ROOM

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SEAL

NORTH ARROW

DESIGN BY:	J.V.
DRAWN BY:	C.A.
CHECKED:	J.V.
DATE:	APRIL 2026
SCALE:	1:300

CLIENT/PROJECT

ROYAL CANADIAN LEGION
BALA LEGION HERITAGE MANOR
1011 MAPLE AVENUE, BALA
TOWNSHIP OF MUSKOKA LAKES

DRAWING TITLE

SITE SERVICING PLAN

PROJECT NO.	DRAWING NO.	REVISION
26-11893M	SERV-1	0

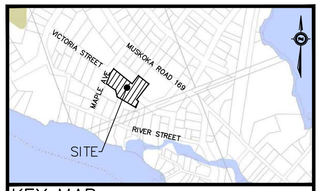
SERV-1

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CLIENT/PROJECT

ROYAL CANADIAN LEGION
BALA LEGION HERITAGE MANOR
1011 MAPLE AVENUE, BALA
TOWNSHIP OF MUSKOKA LAKES

DRAWING TITLE

SITE GRADING PLAN

PROJECT NO.	DRAWING NO.	REVISION
26-11893M	GP-1	0

GP-1

LEGEND

- LIMIT OF EXISTING VEGETAION
- EX. SANITARY MANHOLE
- EX. CATCH BASIN
- EX. STORM MANHOLE
- EXISTING HYDRANT
- EXISTING WATER VALVE
- EXISTING CSV
- DIRECTION OF MAJOR OVERLAND FLOW
- BH#1 BOREHOLE LOCATION
- 2.0% SURFACE DRAINAGE & GRADE
- × 285.80ex EX. SPOT ELEVATION
- × 286.60 PROP. SPOT ELEVATION
- × (286.60) PROP. SWALE ELEVATION
- × 286.60T/C PROP. TOP OF CURB ELEVATION
- × 286.60T/W PROP. TOP OF WALL ELEVATION
- × 286.60B/W PROP. BOTTOM OF WALL ELEVATION
- PROP. SANITARY MANHOLE
- PROP. CATCHBASIN
- PROP. CATCHBASIN MANHOLE
- PROP. STORM MANHOLE
- PROP. HYDRANT
- PROP. WATER VALVE
- TEST PIT #1 TEST PIT LOCATION

TATHAM ENGINEERING

Enhancing our communities



1011 Maple Avenue

PARKING JUSTIFICATION STUDY

Royal Canadian Legion (Branch 424)

File 426024 | April 23, 2026

Document Control

File:

426024

Date:

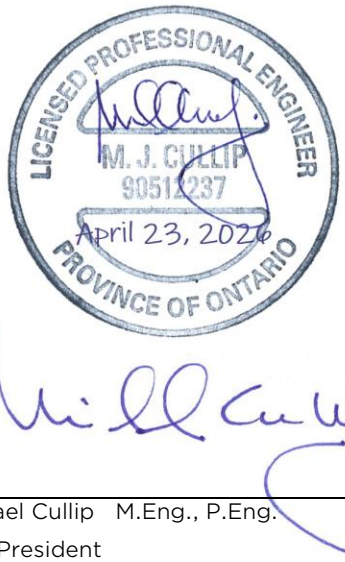
April 23, 2026

Prepared by:

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Prepared for:

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Authored by:	Reviewed by:
	
Matthew Buttrum B.Eng., EIT Engineering Intern	Michael Cullip M.Eng., P.Eng. Vice President

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Issue	Date	Description
1	April 23, 2026	Final Report

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1 Introduction

Tatham Engineering Limited was retained by the Royal Canadian Legion (Branch 424) to undertake a parking review in support of the proposed new Legion and residential development to replace the existing Legion building at 1011 Maple Avenue in Bala, Township of Muskoka Lakes, District Municipality of Muskoka. The location of the site is illustrated in Figure 1.

1.1 REPORT OBJECTIVE

The objective of this report is to establish the parking needs of the site and justify an appropriate parking supply. In doing so, this study has considered the following:

- the proposed parking supply for the development;
- the Township's current parking requirements;
- parking demand data published by the ITE;
- proxy site data gathered in support of other similar developments; and
- methodologies employed in establishing parking demand.

It is noted that this report will focus on the needs of the residential uses proposed for the site, as this represents a new use for the site. Parking demand for the Legion and medical clinic will be accommodated by existing municipal parking in the area.

1.2 REPORT STRUCTURE

The report is structured as follows:

- Chapter 1: introduction and report objective;
- Chapter 2: proposed development and associated details including parking requirements and supply;
- Chapter 3: parking review, detailing the findings of reviews of parking requirements;
- Chapter 4: parking justification, detailing the justifications for a modified parking supply based on the findings of the parking review; and
- Chapter 5: summary of the report.

2 Proposed Development

2.1 LOCATION

The site is located at 1011 Maple Avenue, in the community of Bala, Township of Muskoka Lakes, as illustrated in Figure 1

2.2 LAND USE

2.2.1 Existing

The site is currently occupied by the Royal Canadian Legion (Branch 424), an approximately 600 m^2 (6,500 ft^2) building containing spaces for community use (hall, kitchen, etc.).

2.2.2 Proposed

The proposed development will see the demolition of the existing Legion building and replacement with a new 4-storey apartment building. The new building will contain a total of 128 rental apartment units of which approximately 33% will be designated affordable housing units. The residential units will be composed of 1 and 2-bedroom units, as follows:

- 1 bedroom: 68 units; and
- 2 bedroom: 60 units.

In addition to the residential uses, approximately 9,000 ft^2 (834 m^2) of ground-floor space will be provided to maintain the Legion branch, consisting of community-use spaces and a small medical clinic (approximately 75m^2, or 800 ft^2).

A site plan illustrating the proposed development is provided in Figure 2.

2.3 PARKING SUPPLY

As per the site plan, the proposed development will provide a total of 56 parking spaces on-site.

A further 81 spaces are potentially available in the existing municipal parking lot located opposite the development site, at the southwest corner of the Maple Avenue intersection with Victoria Street.

3 Parking Review

To ensure the parking supply for the site is appropriate, a review was conducted to consider the following:

- parking requirements as per the *Township of Muskoka Lakes Comprehensive Zoning By-law 2014-14*[1]*;*
- parking requirements for similar developments in comparable municipalities;
- parking demands as per the *ITE Parking Generation Manual, 6th Edition*[2];
- proxy site data gathered in support of other developments; and
- other considerations which can influence parking demand.

3.1 MUNICIPAL PARKING STANDARDS

3.1.1 Township of Muskoka Lakes

The *Township of Muskoka Lakes Comprehensive Zoning By-law* dictates parking supply rates for all land uses in the Township. For an apartment land use, the Township requires a supply of 1.75 spaces per dwelling unit plus an additional 0.5 spaces per dwelling unit for visitor use, translating to an overall requirement of 2.25 spaces per dwelling unit.

3.1.2 Other Municipalities

For apartment/multiple dwelling developments, as summarized in Table 1, most municipalities included in the review provide a single rate (i.e. they do not distinguish between condominium and rental uses). Two exceptions are noted:

- Huntsville requires a supply of 1.25 spaces per unit for a condominium apartment within the Urban Settlement Area, and 1 space per unit for rental apartments.
- Lindsay requires a supply of 1.3 spaces per unit for condominium apartments, and 1.1 spaces per unit for rental apartments

As indicated, base parking supply rates in the order of 1.0 to 1.5 spaces per dwelling unit are most common among the municipalities reviewed. When specified, a supply of 0.25 spaces per dwelling unit for visitor use is most common (which is typically coupled with a base rate of 1.25 spaces per unit or lower).

---

[1] *Comprehensive Zoning By-law 2014-14*. Township of Muskoka Lakes, consolidated February 2023.
[2] *Parking Generation Manual, 6th Edition*. Institute of Transportation Engineers. October 2023.

Table 1: Municipal Parking Rates – Apartment or Equivalent

MUNICIPALITY	PARKING RATES		
	Base	Visitor	Total
Muskoka Lakes	**1.75 per unit**	**0.5 per unit**	**2.25 per unit**
Bracebridge	1.5	not specified	1.5
Brock	1.0	not specified	1.0
Collingwood	0.5	0.25	0.75
East Gwillimbury	1.0	0.25	1.25
Fenelon Falls	1.5	not specified	1.5
Georgian Bay	1.5	0.25	1.75
Gravenhurst	1.0	0.25	1.25
Huntsville	1.0	0.20	1.20
Lake of Bays	1.5	0.5	2.0
Lindsay	1.1	0.25	1.35
Midland	1.125 (75%)	0.375 (25%)	1.5
North Bay	1.2	0.3	1.5
Owen Sound	1.25	not specified	1.25
Parry Sound	1.062 (85%)	0.188 (15%)	1.25
Penetanguishene	1.5	0.25	1.75
Ramara	1.5	not specified	1.5

3.2 ITE PARKING RATES

The Institute of Transportation Engineers (ITE) *Parking Generation Manual, 6th Edition*, provides parking supply and demand data for many land uses. In considering the uses proposed for the subject site, parking demand for the *multifamily housing – mid-rise, 2+ bedroom* (ITE land-use code 221) were considered. ITE defines this land use as:

"*a residential building with between 4 and 10 floors of residence that contain at least one dwelling unit with 2 or more bedrooms. Access to individual dwelling units is through an outside building entrance, a lobby, elevator, and a set of hallways*".

The available parking demand data for this land use is summarized in Table 2. ITE provides demand data both on a per-unit basis as well as a per-bedroom basis; both are noted.

Table 2: ITE Parking Demand – Multifamily Mid-rise, 2+ Bedroom

PARKING STATISTIC	PER UNIT	PER BEDROOM
Average Parking Supply	1.7 spaces per unit	
Average Parking Demand	1.23	0.78
Range of Rates	0.39 to 1.75	0.34 to 1.00
Parking Demand – Fitted Curve Equation	P = 1.32(X) – 19.46 (R^2 = 0.96)	P = 0.93(X) – 35.19 (R^2 = 0.96)

As indicated, an average supply of 1.7 parking spaces per unit is provided at the sites within the ITE dataset. Average peak parking demands of 1.23 spaces space per unit and 0.78 spaces per bedroom are realized. Fitted equations are available to estimate demand based on either variable, each with a very high coefficient of variation (R^2; a measure of how well the equation reflects trends/variance in the data).

It is noted that ITE does not differentiate between resident and visitor parking demand.

3.3 PROXY SITES

Parking surveys at proxy sites are used to establish actual parking demands at comparable developments to that which is proposed. Proxy site data was compiled from other studies completed by Tatham Engineering in support of similar developments. The survey data is from rental apartment sites located in Barrie, Lindsay, and Orillia.

3.3.1 Proxy Sites

Lindsay

Parking data (inclusive of both resident and visitor demands) was available from 6 proxy sites located in suburban areas of Lindsay. The proxy sites and key information are summarized in Table 3, with their locations illustrated in Figure 3.

In considering Lindsay's parking requirements for apartment sites, it is noted that none of the proxy sites meet the current supply requirement of 1.35 spaces per unit (i.e. 1.1 spaces per unit + 0.25 spaces/unit for visitors). All sites were determined to provide less than 1.35 spaces per unit. Furthermore, those with a designated visitor supply provided less visitor parking than the required supply of 0.25 spaces per unit.

Table 3: Proxy Sites – Lindsay

SITE	ADDRESS	USE	SIZE	RESIDENT SUPPLY		VISITOR SUPPLY	
				Spaces	Per Unit	Spaces	Per Unit
Broadway Apartments	25 Westwood Court	rental apts	108 units	111	1.03	10	0.09
Briarwood Apartments	126 Colborne Street West	rental apts	41 units	53	1.29	9	0.22
Brentwood Apartments	107 Colborne Street West	rental apts	47 units	52	1.11	4	0.09
53 Adelaide	53 Adelaide Street North	rental apts	77 units	74	0.96	9	0.12
Park Terrace Apartments	41 Angeline Street North	rental apts	48 units	61	1.27	none identified	
Park View Apartments	35 Angeline Street North	rental apts	59 units	63	1.07	none identified	

Orillia

Resident and visitor parking data was available for 3 proxy sites in the City of Orillia. Details of each site are summarized in Table 4 with their locations illustrated in Figure 4. In considering Orillia's parking requirements for apartment sites, none of the proxy sites meet the current supply requirement of 1.5 spaces per unit (i.e. 1.125 spaces per unit + 0.375 spaces/unit for visitors). All sites were determined to provide 1.25 spaces per unit or less. Furthermore, those with a designated visitor supply provided less visitor parking than the required supply of 0.375 spaces per unit.

Table 4: Proxy Sites – Orillia

SITE	ADDRESS	USE	SIZE	RESIDENT SUPPLY		VISITOR SUPPLY	
				Spaces	Per Unit	Spaces	Per Unit
Atherley Place Apts	135 Atherley Road	rental apts	48 units	48	1.00	12	0.25
Mariposa Place Apts	125 Fittons Road	rental apts	88 units	110	1.25	none identified	
Noble Towers	391 Barrie Road	rental apts	84 units	84	1.00	none identified	

Barrie

Visitor parking data was available from 6 sites in the City of Barrie. Details of each site are summarized in Table 5 with their locations illustrated in

Figure 5. Note that the City of Barrie does not have a minimum requirement for visitor parking. As such, visitor parking supply is left to the developer's discretion.

Table 5: Proxy Sites – Barrie

SITE	ADDRESS	USE	SIZE	VISITOR PARKING SUPPLY	
				Spaces	Per Unit
Cedarwood Court	125 Wellington Street	rental apts	110 units	14	0.13
Wellington Place	135-139 Wellington Street	rental apts	70 units	4	0.06
Highpoint Barrie	2 Kozlov Street	rental apts	155 units	10	0.06
Sunnidale Place	12 Kozlov Street	rental apts	114 units	12	0.11
Summitview	380 Duckworth Street	rental apts	99 units	18	0.18
Georgian Towers	262 Rose Street	rental apts	75 units	7	0.09

3.3.2 Proxy Surveys

Lindsay

The Lindsay proxy site parking surveys were completed by Tatham Engineering staff on Tuesday, February 10, 2026, between 8:00 PM and 12:00 AM. Surveys were completed every hour during the survey period, for a total of 4 surveys at each site. Results of the parking surveys are summarized in Table 6 through Table 8. It is acknowledged that these parking surveys were conducted in the winter, thus there were instances where some parking spaces were utilized for snow storage and thus unavailable for parking. Nevertheless, based on observations at each site, the loss of these spaces did not cause a shortage of on-site parking or otherwise impact the parking needs of each site (i.e. no parking lots were observed to be full).

The proxy surveys indicate the following:

- resident parking demand ranged from 0.71 to 0.85 spaces per unit;
- visitor parking demand was 0.05 spaces per unit or less (where it could be measured); and
- total parking demand ranged from 0.72 to 0.87 spaces per unit.

Table 6: Lindsay Proxy Sites – Resident Parking Demand

SITE	SIZE	RESIDENT PARKING (SPACES)	WEEKDAY DEMAND (Spaces)				MAXIMUM DEMAND	
			8PM	9PM	10PM	11PM	Spaces	Per unit
Broadway Apartments	108 units	111	71	72	76	77	77	0.71
Briarwood Apartments	41 units	53	28	28	29	29	29	0.71
Brentwood Apartments	47 units	52	37	36	37	38	38	0.81
53 Adelaide	77 units	74	63	63	65	65	65	0.84
Park Terrace Apartments	48 units	61	40	39	40	41	41	0.85
Park View Apartments	59 units	63	43	44	44	44	44	0.75

Table 7: Lindsay Proxy Sites – Visitor Parking Demand

SITE	SIZE	VISITOR PARKING (SPACES)	WEEKDAY DEMAND (Spaces)				MAXIMUM DEMAND	
			8PM	9PM	10PM	11PM	Spaces	Per unit
Broadway Apartments	108 units	10	1	1	1	1	1	0.01
Briarwood Apartments	41 units	9	2	2	2	2	2	0.05
Brentwood Apartments	47 units	4	0	0	0	0	0	0.00
53 Adelaide	77 units	9	2	2	2	2	2	0.03
Park Terrace Apartments	48 units	-	-	-	-	-	-	-
Park View Apartments	59 units	-	-	-	-	-	-	-

Orillia

The parking surveys in Orillia were completed by Tatham Engineering staff on Monday, April 26, 2020, from 7:00 PM to 10:00 PM (Mariposa Place Apartments and Noble Towers) and on Wednesday, May 25, 2022, from 8:00 PM to 11:00 PM (all other sites). Surveys were completed every hour during the surveying period, for a total of 3 surveys at each site. Results of the parking surveys are summarized in Table 9 though Table 11.

Table 8: Lindsay Proxy Sites – Total Parking Demand

SITE	SIZE	TOTAL PARKING (SPACES)	WEEKDAY DEMAND (Spaces)				MAXIMUM DEMAND	
			8PM	9PM	10PM	11PM	Spaces	Per unit
Broadway Apartments	108 units	121	72	73	77	78	78	0.72
Briarwood Apartments	41 units	62	30	30	31	31	31	0.76
Brentwood Apartments	47 units	56	37	36	37	38	38	0.81
53 Adelaide	77 units	83	65	65	67	67	67	0.87
Park Terrace Apartments	48 units	61	40	39	40	41	41	0.85
Park View Apartments	59 units	63	43	44	44	44	44	0.75

For each site:

- maximum resident parking demand ranged from 0.71 to 0.92 spaces per unit;
- peak visitor demand, where such could be measured, was 0.06 spaces per unit; and
- maximum total parking demand (resident + visitor) ranged from 0.75 to 0.92 spaces per unit.

Table 9: Orillia Proxy Sites – Resident Parking Demand

SITE	SIZE	RESIDENT PARKING (SPACES)	WEEKDAY DEMAND (Spaces)				MAXIMUM DEMAND	
			7PM	8PM	9PM	10PM	Spaces	Per unit
Atherley Place Apartments	48 units	48	-	34	32	33	34	0.71
Mariposa Place Apartments	88 units	110	73	79	81	-	81	0.92
Noble Towers	84 units	84	58	64	68	-	68	0.81

Table 10: Orillia Proxy Sites – Visitor Parking Demand

SITE	SIZE	VISITOR PARKING (SPACES)	WEEKDAY DEMAND (Spaces)				MAXIMUM DEMAND	
			7PM	8PM	9PM	10PM	Spaces	Per unit
Atherley Place Apartments	48 units	12	-	2	3	3	3	0.06
Mariposa Place Apts	88 units	-	-	-	-	-	-	-
Noble Towers	84 units	-	-	-	-	-	-	-

Table 11: Orillia Proxy Sites – Total Parking Demand



SITE	SIZE	TOTAL PARKING (SPACES)	WEEKDAY DEMAND (Spaces)				MAXIMUM DEMAND	
			7PM	8PM	9PM	10PM	Spaces	Per unit
Atherley Place Apartments	48 units	60	-	36	35	36	36	0.75
Mariposa Place Apts	88 units	110	73	79	81	-	81	0.92
Noble Towers	84 units	84	58	64	68	-	68	0.81

Barrie

The visitor demand surveys at the Barrie proxy sites were conducted by Tatham Engineering staff on Saturday, November 12, 2022, from 12:00 PM to 2:00 PM and 10:00 PM to 12:00 AM. Each site was visited once per hour during the observation periods, for a total of 3 visits per observation period. Results of the visitor parking surveys are summarized in Table 12. As indicated, peak visitor parking demands ranged from 0.04 to 0.13 spaces per unit.

Table 12: Barrie Proxy Sites – Visitor Parking Demand

SITE	SIZE	VISITOR PARKING (SPACES)	WEEKEND DEMAND (Spaces)						MAXIMUM DEMAND	
			12PM	1PM	2PM	10PM	11PM	12AM	Spaces	Per unit
Cedarwood Court	110 units	14	5	6	4	4	3	3	6	0.05
Wellington Place	70 units	4	3	3	3	3	3	3	3	0.04
Highpoint Barrie	155 units	10	10	9	9	6	5	6	10	0.06
Sunnidale Place	114 units	12	3	4	3	2	1	1	4	0.04
The Junction Condos	120 units	10	8	7	6	7	7	7	8	0.07
Summitview	99 units	18	11	13	13	13	13	13	13	0.13
Georgian Towers	75 units	7	4	4	5	3	2	2	5	0.07

3.4 LITERATURE REVIEW

3.4.1 City of Peterborough

In support of the vision of the City of Peterborough's new *Official Plan*[3] and *Transportation Master Plan*[4], a review of the City's then-current parking requirements was undertaken. The research and findings of the review were published in the *Residential Parking Standards Review*[5] report. While it is recognized that the review was specific to Peterborough's parking needs, the report is comprehensive in its review of parking standards for multiple land-uses and contains valuable insights with respect to establishing parking rates.

The *Parking Standards Review* recommends dividing the City into 5 parking areas, in part based on existing *Official Plan* designations, as follows:

- Parking Area 1 – downtown core area;
- Parking Area 2 – area surrounding the downtown core area;
- Parking Area 3 – other strategic growth areas not in Area 1 or 2;
- Parking Area 4 – lands within 450m of key transit corridors; and
- Parking Area 5 – all other City lands.

In addition to establishing parking areas, the *Parking Standards Review* also recommends greater granularity with respect to the required parking rates for different types of residential developments. In contrast to the existing blanket rate for any multi-unit dwelling (i.e. 3 or more dwelling units), the *Parking Standards Review* notes independent rates for several types of multi-unit residential developments, including low-rise apartments (up to 5 storeys) and multiplex dwellings. Additionally, distinct visitor parking rates are recommended.

Ultimately, many of the recommendations set forth in the *Parking Standards Review* were adopted by the City through a 2025 amendment (By-law 25-008) to their zoning by-law. The new parking rates, as applicable to the proposed development, are summarized in Table 13. As indicated, the recommended rates for apartments are 0.6 to 1.2 parking spaces per unit, inclusive of visitor requirements.

In addition to the reduced parking rates, the *Parking Standards Review* also identifies other strategies for further reducing required parking at developments within the City, including:

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[3] *City of Peterborough Official Plan*. City of Peterborough. Approved April 11, 2023.
[4] *Move PTBO – City of Peterborough Transportation Master Plan*. City of Peterborough & WSP. June 2023.
[5] *City of Peterborough Residential Parking Standards Review*. Paradigm Transportation Solutions Limited. October 2023.

- providing long-term bicycle parking spaces in excess of minimum requirements;
- offering unbundled parking (providing parking to residents on an as-needed basis for a fee separate from the cost of their unit);
- providing dedicated car-sharing spaces; and
- providing dedicated bicycle-sharing services and parking spaces.

The *Parking Standards Review* recommends that the maximum attainable reduction in parking supply is limited to 10% for each noted reduction strategy, translating to a maximum parking reduction of up to 40% at a given development. Most of these recommendations were adopted in the City's *Zoning By-law* with exception of unbundled parking, which was not adopted.

Table 13: Parking Rates – Peterborough

LAND USE		MINIMUM PARKING REQUIREMENT (SPACES PER UNIT[1])				
		Parking Area 1	Area 2	Area 3	Area 4	Area 5
apartments	resident	0.5 per unit	0.5	1.0	1.0	1.0
	visitor	0.1 per unit	0.1	0.1	0.2	0.2

3.4.2 Affordable Housing

As previously noted, 33% of the proposed units (42 units) will be designated as affordable units. Those living in affordable housing typically have lower rates of vehicle ownership than those living in market-rate housing. Recognizing this, many municipalities have reduced parking requirements for such developments.

City of North Bay

The City of North Bay requires 0.5 spaces per affordable unit.

City of Sudbury

The City of Sudbury has adopted a 25% reduction to their standard rates of 1.5 spaces per dwelling unit, thus affordable housing must provide 1.12 spaces per dwelling unit.

City of Belleville

In 2020, the City of Belleville completed a review of their parking standards with respect to the parking requirements of affordable housing developments. The findings were published in the

Guidelines for the Reduction of Parking Requirements for Affordable Rental Housing[6] report. The report reviews the City's current parking standards (1.25 spaces per unit for apartment-type developments) and notes that they are seen as a significant barrier in incentivizing the development of affordable housing. Several case studies of existing affordable developments across southern Ontario were explored (some of which were purpose-built and others were converted from previous uses), with data on parking supply versus usage provided where available.

The report recommends that the City consider granting variances for lower parking rates to medium and high-density affordable housing developments at the following rates:

- 0.5 to 0.75 spaces per unit when located in a *walkable and transit accessible neighbourhood*; and
- 0.75 to 1.00 spaces per unit in less walkable and less transit accessible areas.

To qualify as a *walkable and transit accessible neighbourhood,* the site must be located within a 5 to 10 minute walk (400 to 800 metre radius) of:

- amenities which meet the daily needs of a tenant, such as grocery stores, schools, community facilities, and retail plazas with businesses which carry food products; and
- transit services (frequency of service is not mentioned in the report, though Belleville's bus routes operate on a half-hourly peak frequency).

In considering the location of the subject site, the *walkable and transit accessible neighbourhood* criteria are largely unmet – few amenities are available within an 800 metre radius of the site and transit service is not currently offered in Bala. Therefore, the rate of 0.75 to 1.00 spaces per unit is considered applicable.

City of Mississauga

In 2022, the City of Mississauga completed a review of their parking standards, which was documented in the *Parking Regulations Study – Policy Directions for Consultation*[7] report. The report included discussion on appropriate parking requirements for public authority/non-profit housing developments. The report found that parking demand at existing non-profit housing sites was well below the minimum requirements of the City's then-current parking requirements for for-profit sites. In other words, providing parking at the same rate as was suitable for for-profit developments would result in a significant parking oversupply at non-profit developments,

[6] *Guidelines for the Reduction of Parking Requirements for Affordable Rental Housing*. City of Belleville & Dillon Consulting Ltd. January 2020.
[7] *Parking Regulations Study – Policy Directions for Consultation.* WSP. March 24, 2022.

increasing development and upkeep costs unnecessarily. The findings of the review were incorporated into an amendment to the City's *Zoning By-law*[8] and are summarized in Table 14. The recommended rates are provided by precinct, with lower rates required in precincts with greater levels of walkability, access to rapid transit, density, etc., such as the City centre core and within intensification areas (i.e. similar to the conclusions reached by the City of Belleville).

Table 14: City of Mississauga Parking Rates – Public Authority & Non-Profit Housing

UNIT OF MEASUREMENT	PRECINCT 1	PRECINCT 2	PRECINCT 3	PRECINCT 4
resident spaces per unit	0.4	0.6	0.65	0.7
visitor spaces per unit	0.2	0.2	0.2	0.2
Total spaces per unit	**0.6**	**0.8**	**0.85**	**0.9**

As indicated, the City recommends a supply rate of 0.4 to 0.7 spaces per unit plus a fixed requirement of 0.2 spaces per unit for visitor parking. With respect to the subject development's location, the rates for Precinct 4 are considered most appropriate to apply, amounting to 0.9 spaces per unit.

Other Parking Studies

The *Collingwood Affordable Housing Traffic Impact Study & Parking Study for Simcoe County Housing Corporation*[9] (which assessed parking needs for an affordable housing development in the Town of Collingwood), found that parking utilization rates across several affordable housing study sites was 0.33 to 0.64 spaces per unit, averaging 0.52 spaces per unit. The noted study ultimately recommended a parking rate of 0.75 spaces per unit + 0.25 visitor spaces per unit, for a total of 1.0 space per unit.

3.5 PARKING REDUCTIONS

The minimum parking requirement for residential uses is typically low risk, recognizing that parking availability is usually a key decision for a prospective purchaser or renter. Developers are not inclined to reduce parking supply to the extent that it compromises the marketability of the development. It is further noted that providing surplus parking increases the cost of a

[8] *Mississauga Zoning By-law 0225-2007*. City of Mississauga, as amended through January 2026.
[9] *Collingwood Affordable Housing Traffic Impact Study & Parking Study for Simcoe County Housing Corporation.* JD Northcote Engineering Inc. February 2017.

development. Thus, minimizing the parking requirement to the extent possible reduces development costs, in turn making dwelling units more affordable.

3.6 SUMMARY

The key findings of the parking review are summarized below:

- The proposed parking supply for the subject development is 56 on-site spaces, or 0.44 spaces per unit. Up to 81 off-site spaces may also be available opposite the site, increasing the potential parking supply by up to 0.63 spaces per unit (should all such spaces be available for residential use).
- Based on Muskoka Lakes' current parking requirements, the proposed development is required to supply 2.25 spaces per unit, amounting to 288 spaces.
- Parking rates adopted by comparable municipalities typically range from 1.0 to 1.5 spaces per unit for an apartment-type dwelling, inclusive of both resident and visitor parking requirements.
- Parking surveys conducted at rental apartment proxy sites in Lindsay indicate peak resident parking demands of 0.71 to 0.85 spaces per unit (average of 0.79 spaces per unit). Visitor parking demand, where measured, was 0.05 spaces per unit or less.
- Parking surveys conducted at rental apartment proxy sites in the City of Orillia indicate peak parking demands of 0.75 to 0.92 spaces per unit at comparable apartment sites (average of 0.82 spaces per unit).
- Parking surveys conducted at rental apartment proxy sites in the City of Barrie indicate peak visitor parking demands of 0.04 to 0.13 spaces per unit at comparable apartment sites (average of 0.07 spaces per unit).
- The City of Peterborough's *Residential Parking Standards Review* recommended reduced parking requirements for most types of dwellings, which were later adopted by the City through a zoning by-law amendment. The City now requires apartments to supply 0.6 to 1.2 spaces per dwelling unit (depending on location within the City), with further reductions possible through provision of other parking reduction strategies.
- Affordable housing units typically see lower rates of vehicle ownership than market-rate housing units. Recognizing this, many municipalities reduce parking requirements for affordable housing units below those of market-rate units.
- Surveys of affordable housing sites in Barrie indicate peak parking demand rates of 0.33 to 0.64 spaces per unit, averaging 0.52 spaces per unit.



- Reduced parking minimums for residential uses are typically low-risk, recognizing that parking availability is key consideration for many tenants (i.e. prospective tenants will avoid renting units in developments which cannot accommodate their parking needs). Thus, developments with reduced parking will attract tenants with one or no vehicles, rather than multi-vehicle households.

4 Parking Needs Assessment

As previously noted, the site will include a total of 56 parking spaces on-site plus up to 81 additional spaces in a nearby off-site lot, representing a shortfall of over 90 spaces when considering Muskoka Lakes' current parking requirements for residential apartment uses. Based on the parking review conducted in Chapter 3, the following justification is provided in support of the proposed parking supply for the development.

4.1 PARKING JUSTIFICATION

4.1.1 Municipal Parking Standards

A review of parking standards in municipalities comparable to Muskoka Lakes revealed that the standard apartment parking rate adopted by Muskoka Lakes (2.25 spaces per unit) is much higher than the reviewed municipalities. As noted in Table 1, most municipal rates range from 1.0 to 1.5 parking spaces per apartment-type dwelling unit, inclusive of both resident and visitor requirements. While the proposed supply (0.44 spaces/unit on-site, up to 0.63 spaces per unit off-site) is on the lower end of these provisions rates, it nevertheless within the range of rates and thus considered supportable.

4.1.2 ITE Parking Rates

Parking supply and demand rates for the subject development have been calculated per ITE *Parking Generation Manual* data noted in Table 2 and are summarized below in Table 15.

Table 15: Parking Requirements – ITE Parking Generation

TYPE OF PARKING RATE	PARKING DEMAND	
	128 Units	188 Bedrooms
Average Parking Demand	158 spaces	147 spaces
Peak Parking Demand Range	50 to 224	64 to 188
Fitted Curve Demand	150	140

When considering the unit-based values, the parking supply for the proposed development (56 spaces on-site, up to 137 spaces total) is within the range of peak parking demand noted in the ITE *Parking Generation Manual* for the *multifamily housing – mid-rise* land-use, and is somewhat less than the average peak demand and fitted curve demand (158 spaces and 150 spaces, respectively) observed within the ITE dataset. When considering the bedroom-based values, the

proposed supply also falls within the observed demand range, and is noted to be closer to the values calculated using average peak demand and fitted curve demand.

In this respect, the proposed parking rate is supported by empirical ITE parking generation data.

4.1.3 Proxy Site Parking Surveys

The proposed parking supply is supported by the results of the parking surveys conducted in Barrie, Lindsay, and Orillia. Considering the peak demand rate observed across all sites in Lindsay and Orillia, the parking demand for the subject site was estimated, as summarized in Table 16. Note that this is the combined demand for both residents and visitors.

Table 16: Parking Requirements – Apartment Proxy Sites

PROXY LOCATION	SIZE	PEAK DEMAND RATE (COMBINED)	REQUIRED SUPPLY
Lindsay	128 units	0.87 spaces/unit	112 spaces
Orillia	128 units	0.92 spaces/unit	118 spaces

As indicated, when considering the peak demand observed at various proxy sites across Lindsay, the subject site is expected to experience a peak parking demand of 112 spaces (inclusive of both resident and visitor demands), which is less than the 137 total spaces proposed.

Additional support is provided by proxy site data gathered in the City of Orillia, where a peak demand rate of 0.92 spaces per unit (inclusive of resident and visitor demands). Considering this demand rate, the subject site would experience a peak parking demand of 118 spaces.

With respect to the provision of visitor parking, corresponding demands were measured at several sites in Lindsay, Orillia and Barrie. Peak visitor demand rates across all sites in each community were:

- Lindsay – 0.05 spaces per unit;
- Orillia – 0.06 spaces per unit; and
- Barrie – 0.13 spaces per unit, though this is noted to be an outlier in the data (all other demand rates in Barrie are 0.07 spaces per unit or less).

These rates are well below the minimum required visitor parking supply in Muskoka Lakes (recall it is 0.5 spaces per unit), indicating that a reduced visitor parking supply is appropriate for the subject site. In considering these rates, visitor parking demand of 7 to 17 spaces is expected at the site.

4.1.4 Literature Review

City of Peterborough

The comprehensive review of parking needs in the City of Peterborough's *Parking Standards Review,* and subsequent adoption into the City's *Zoning By-law*, indicated that a combined parking supply of 0.6 to 1.2 spaces per unit is appropriate for an apartment building. In considering the environment the proposed development would be located in, rates applicable to "all other City lands" would be most appropriate to apply. The requirements for apartments in this environment are 1.0 spaces per unit for residents, and 0.2 spaces per unit for visitors. In this respect, the proposed development would be somewhat deficient for the apartment parking supply, providing up to 1.07 spaces per unit.

The review also identifies additional strategies which can be employed to further reduce the parking supply at the site, such as additional long-term bicycle storage, offering unbundled parking, and providing dedicated car-sharing and bicycle-sharing services. While car-sharing and bicycle-sharing services are not applicable to the Bala area, offering unbundled parking or additional bicycle storage may be viable strategies to reduce parking needs at the site. With unbundled parking, parking would be obtained only by residents who require a parking space, typically through an opt-in or opt-out policy in their rental agreement and for a nominal rental fee per space.

Affordable Housing

The City of Belleville and City of Mississauga each have recommended provision rates for affordable housing developments, ranging from 0.5 to 1.0 spaces per unit in Belleville and 0.6 to 0.9 spaces per unit in Mississauga, depending on the development's location within each city. The parking requirements for the proposed development have been calculated based on an appropriate rate from each city given the characteristics of the site and surrounding area and considering the provision of 42 affordable units in the proposed development. Results of the calculations are summarized in Table 17.

Table 17: Parking Requirements – Belleville & Mississauga Supply Rates

LOCATION	CRITERIA / AREA	PARKING RATES & REQUIREMENTS	
		Parking Rate	Requirement
Belleville	not located within a *walkable and transit accessible neighbourhood*	0.75 to 1.0 space per unit	32 to 42 spaces
Mississauga	Precinct 4	0.9 spaces per unit	38 spaces



In applying the recommended parking rate from each city, the resulting recommended parking for the affordable units is in the order of 42 or fewer parking spaces for the proposed development. These supplies include a visitor component in addition to the resident supply.

Further support for a reduced parking supply for the affordable units is realized based on proxy survey data available from sites in the City of Barrie. Based on the peak demand rates realized across all sites (0.33 to 0.64 spaces per unit) the affordable units in the subject development would require a parking supply of 14 to 27 spaces.

4.2 RECOMMENDATION

Based on the findings of the parking review and justifications made above, the following parking supply is recommended for each use:

- market-rate apartments: 1.0 spaces per unit (82 spaces)
- affordable-rate apartments: 0.6 spaces per unit (26 spaces)

These supply rates result in a total site parking requirement of 112 spaces, of which 50% are provided on-site and the remaining 50% are provided off-site in a nearby parking lot. This provision is less than the maximum provision of 137 spaces possible for the subject site (56 on-site spaces + 81 off-site spaces).

The 112 noted spaces would all be allocated for resident use only. Any demands associated with visitors, be they of residents or functions of the Legion, will be accommodated in existing municipal parking lots near the site. This is considered appropriate given that these parking demands are variable and short-term in nature. Moreover:

- this is how the existing Legion's parking needs are currently accommodated; and
- residential visitor demand is not expected to exceed 27 spaces, based on proxy site data.



5 Summary

This parking justification study has reviewed the parking supply for the proposed redevelopment of 1011 Maple Avenue in the community of Bala, Township of Muskoka Lakes. The redevelopment will see the replacement of the existing Royal Canadian Legion building with a new 4-storey, 128-unit rental apartment building, of which 42 units will be designated affordable housing. This new building will also contain new spaces for the Legion and a small medical clinic. The site is proposing to supply 56 parking spaces on-site and up to 81 parking spaces in a nearby off-site lot, for a total of up to 137 parking spaces. This proposed supply is less than the required parking supply of 288 spaces based on Muskoka Lakes' current parking standards.

This study has reviewed the proposed parking supply in consideration of parking standards adopted by other municipalities, parking demand rates detailed in the ITE's *Parking Generation Manual,* parking survey data gathered at proxy sites within the community of Lindsay, the City of Barrie, and City of Orillia, new parking rates recently adopted by the City of Peterborough, and research into parking demand at affordable housing developments.

While the proposed parking supply does not satisfy the minimum parking requirements as per Muskoka Lakes' current zoning by-law, it is ultimately supported by the parking demand data collected at the proxy sites, parking rates adopted by other municipalities for comparable uses, ITE parking demand data, and reduced parking demands associated with affordable housing developments. In context of these findings, an appropriate parking supply for the subject site is considered to be 112 spaces for resident use, allocated as follows:

- market-rate apartments: 1.0 spaces per unit (82 spaces); and
- affordable-rate apartments: 0.6 spaces per unit (26 spaces).

Parking demands associated with visitors to the site (either of residents or of the Legion) will be accommodated by existing municipal lots near the site, as they already are under existing conditions.



1011 MAPLE AVENUE – PARKING JUSTIFICATION STUDY

Figure 1: Site Location



1011 MAPLE AVENUE – PARKING JUSTIFICATION STUDY

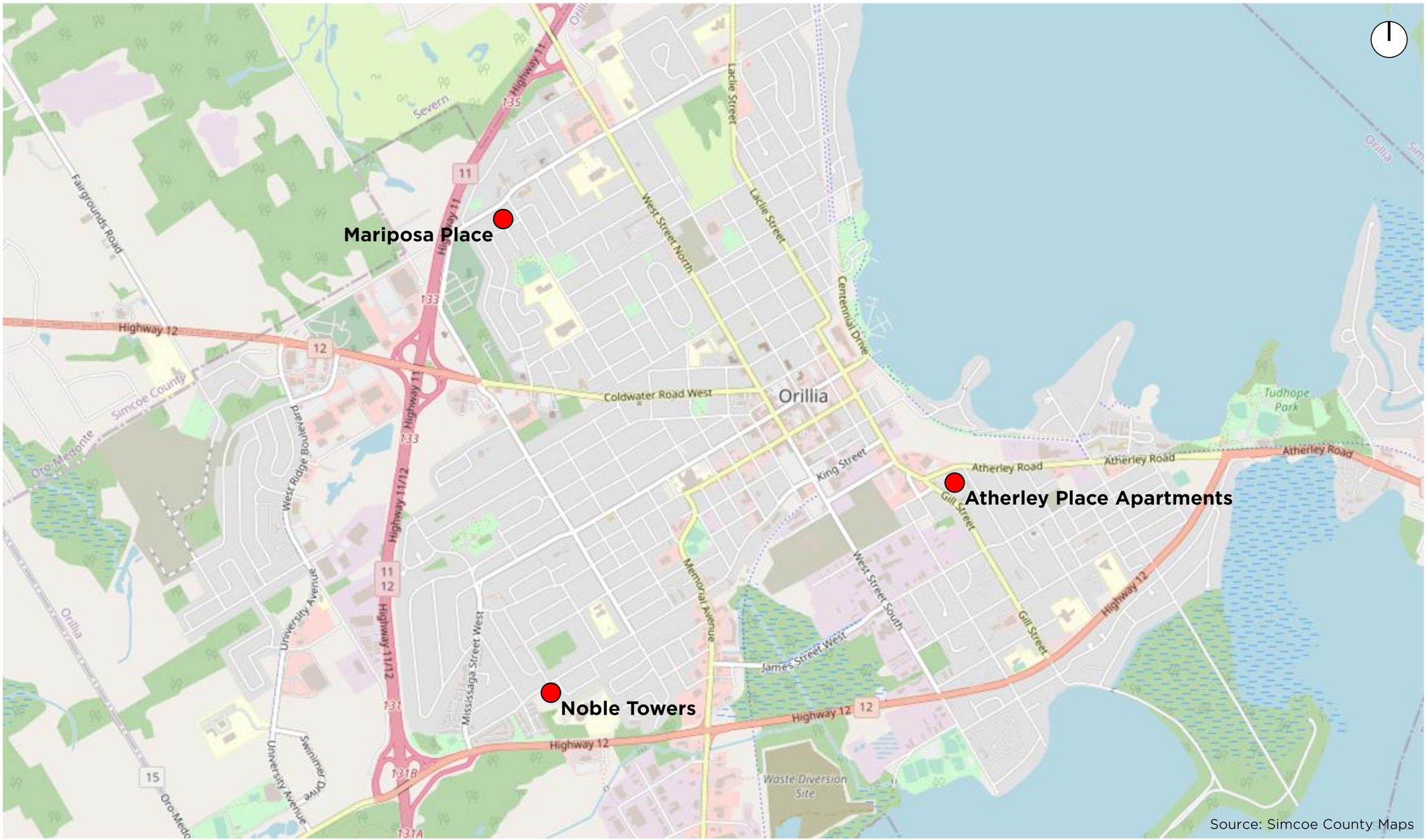
Figure 2: Site Plan



Source: CKL Maps

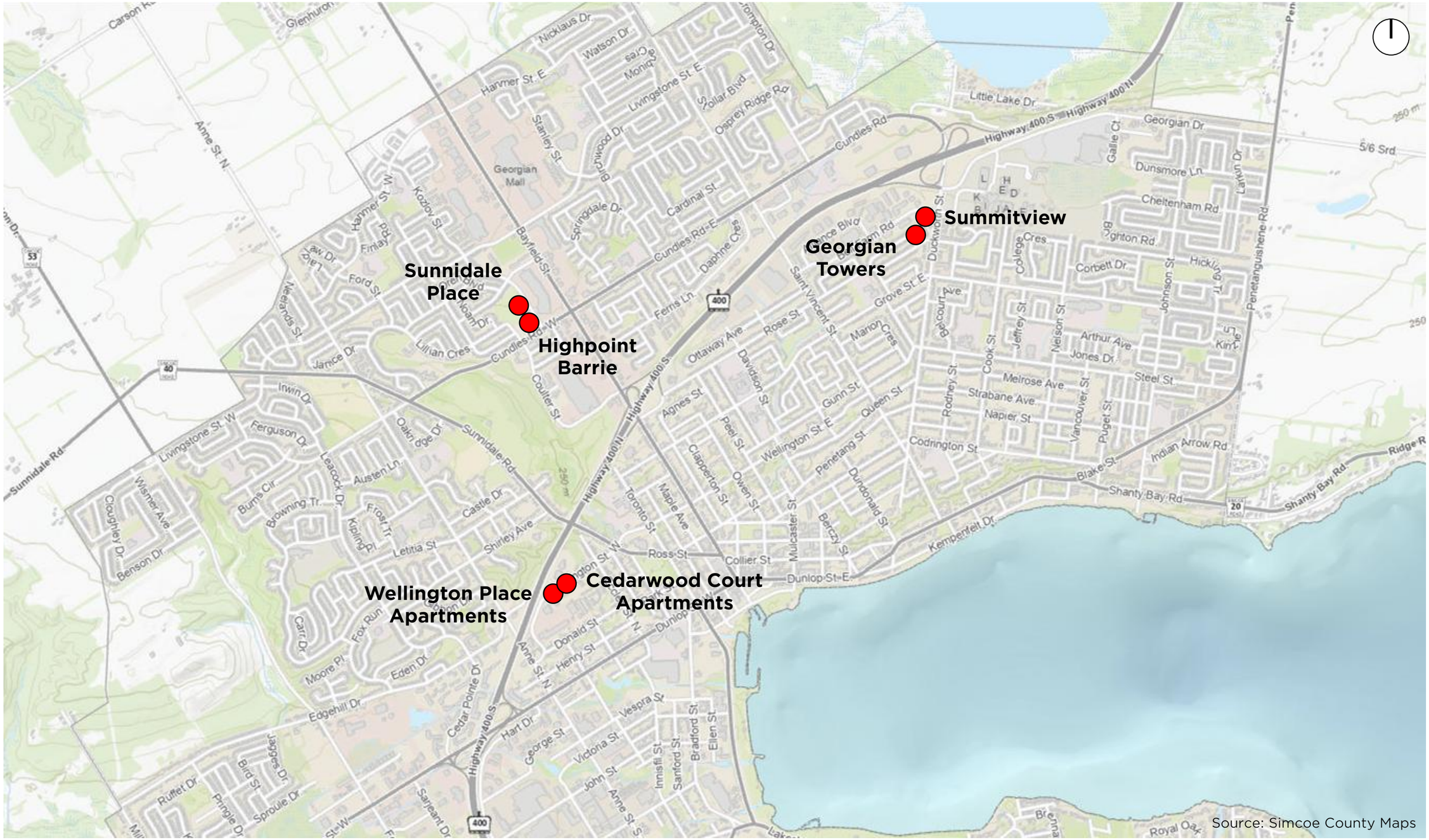
1011 MAPLE AVENUE – PARKING JUSTIFICATION STUDY

Figure 3: Proxy Sites – Lindsay



1011 MAPLE AVENUE – PARKING JUSTIFICATION STUDY

Figure 4: Proxy Sites – Orillia



1011 MAPLE AVENUE – PARKING JUSTIFICATION STUDY

Figure 5: Proxy Sites – Barrie

SURVEYOR'S REAL PROPERTY REPORT
(PART 1) PLAN OF SURVEY OF

LOT 98

AND PART OF

LOT 79, 80, 81, 82, 84, 99, 100, & 101

AND PART OF

VICTORIA STREET

(CLOSED BY DM24989)

REGISTERED PLAN 19

GEOGRAPHIC TOWNSHIP OF MEDORA

TOWNSHIP OF MUSKOKA LAKES

DISTRICT MUNICIPALITY OF MUSKOKA

SCALE 1 : 250

RUDY MAK SURVEYING LTD.

SURVEYOR'S CERTIFICATE

I CERTIFY THAT:

1) THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT, THE SURVEYORS ACT AND THE REGULATIONS MADE UNDER THEM.

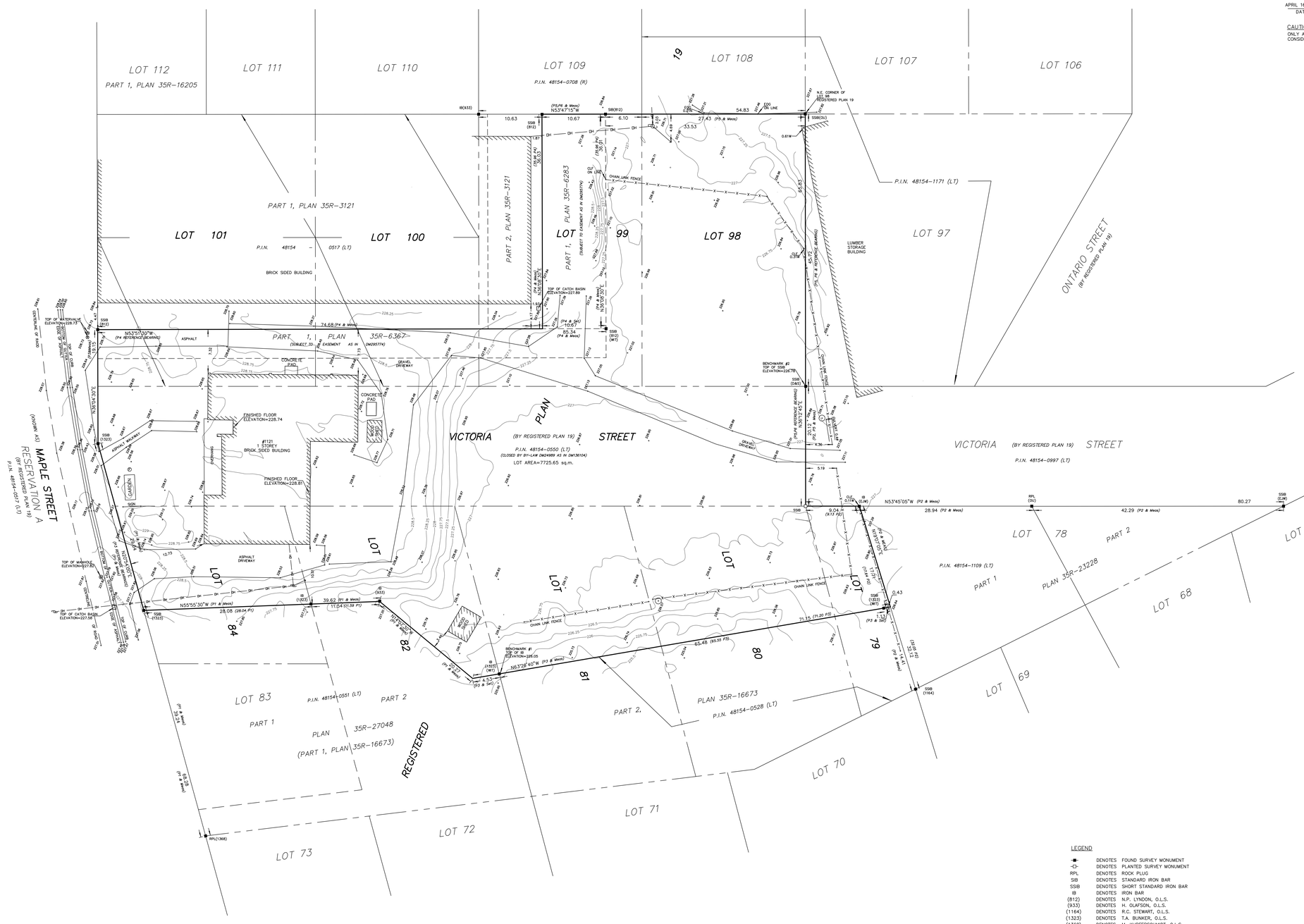
2) THE SURVEY WAS COMPLETED ON THE 16TH DAY OF OCTOBER, 2025.

APRIL 16, 2026
DATE

AARON PARRY
ONTARIO LAND SURVEYOR

CAUTION

ONLY A SIGNED EMBOSSED COPY OF THIS PLAN CAN BE CONSIDERED AS AN ORIGINAL PLAN.



SURVEYOR'S REAL PROPERTY REPORT (PART 2) REPORT SUMMARY

Description of Land
LOT 98 AND PART OF LOT 79, 80, 81, 82, 84, 99, 100 & 101 AND PART OF VICTORIA STREET (CLOSED BY DM24989) REGISTERED PLAN 19 GEOGRAPHIC TOWNSHIP OF MEDORA TOWNSHIP OF MUSKOKA LAKES DISTRICT MUNICIPALITY OF MUSKOKA
Registered easements and/or Right-of-Ways
PARCEL IS SUBJECT TO AN EASEMENT AS IN DM295774 OVER PART 1, PLAN 35R-6367 AS SHOWN ON PLAN.
NO RESEARCH WITH RESPECT TO INDIGENOUS RIGHTS OR INTERESTS CREATED PRIOR TO THE CROWN PATENT HAS BEEN UNDERTAKEN. NOTE: EASEMENTS AND FURTHER RESTRICTIONS ON ANY OR ALL OF THE PARCEL MAY BE FOUND IN THE ORIGINAL CROWN PATENT, ZONING BY-LAWS, OFFICIAL PLANS, SUBDIVISION AGREEMENTS, DEVELOPMENT AGREEMENTS ETC., AND THIS SURVEY AND PLAN HAS NOT SEARCHED FOR THESE RESTRICTIONS, NOR DO WE ACCEPT ANY LIABILITY WITH RESPECT TO ANY OF THESE ELEMENTS.
Boundary Issues
NONE.
Compliance with Municipal Zoning By-Laws
Not certified by this Report.
Additional Remarks
NOTE LOCATION OF ASPHALT DRIVEWAY, LUMBER STORAGE BUILDING, FENCING, GRAVEL DRIVEWAY, GUY WIRE, OVERHEAD WIRES, UTILITY POLES.

THIS REPORT WAS PREPARED FOR VAN HORNE CONSTRUCTION LTD. AND THE UNDERSIGNED ACCEPTS NO RESPONSIBILITY FOR USE BY OTHER PARTIES.

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BENCHMARK #1

SITE BENCHMARK #1 IS THE TOP OF THE IB LOCATED ON THE WESTERN LOT LINE OF LOT 81, HAVING AN ELEVATION OF 226.05.

BENCHMARK #2

SITE BENCHMARK IS THE TOP OF THE SSIB LOCATED AT THE SOUTH EAST CORNER OF LOT 98, HAVING AN ELEVATION OF 226.78.

TIE DISTANCES NOTE:

ALL TIES SHOWN AS N, S, E AND W PROJECTING ⊕.

METRIC:

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

BEARING NOTE

BEARINGS ARE UTM GRID, DERIVED FROM OBSERVED REFERENCE POINTS A TO B, BY REAL TIME NETWORK (RTN) OBSERVATIONS, UTM ZONE 17, NAD83 (CSRS) (2010 EPOCH).

FOR BEARING COMPARISONS, A ROTATION OF 00°56'35" COUNTER-CLOCKWISE WAS APPLIED TO BEARINGS ON (P2).

FOR BEARING COMPARISONS, A ROTATION OF 00°51'00" COUNTER-CLOCKWISE WAS APPLIED TO BEARINGS ON (P3).

FOR BEARING COMPARISONS, A ROTATION OF 00°59'30" COUNTER-CLOCKWISE WAS APPLIED TO BEARINGS ON (P4).

FOR BEARING COMPARISONS, A ROTATION OF 08°23'15" COUNTER-CLOCKWISE WAS APPLIED TO BEARINGS ON (P5) & (P6).

ELEVATION NOTE:

ELEVATIONS ARE GEODETIC IN ORIGIN AND WERE DERIVED FROM OBSERVED REFERENCE POINTS (ORP) USING THE LEICA SMARTNET NETWORK (2010 EPOCH) AND ARE REFERRED TO THE CGVD28:1978 (HTv2.0) DATUM.

LEGEND

■	DENOTES FOUND SURVEY MONUMENT
-□-	DENOTES PLANTED SURVEY MONUMENT
RPL	DENOTES ROCK PLUG
SIB	DENOTES STANDARD IRON BAR
SSIB	DENOTES SHORT STANDARD IRON BAR
IB	DENOTES IRON BAR
(812)	DENOTES N.P. LYNDON, O.L.S.
(933)	DENOTES H. OLAFSON, O.L.S.
(1164)	DENOTES R.C. STEWART, O.L.S.
(1323)	DENOTES T.A. BUNKER, O.L.S.
(1368)	DENOTES M. KUPFERSCHMIDT, O.L.S.
(D&S)	DENOTES DEARDEN & STANTON LTD
(E,W)	DENOTES E.J. WILLIAMS SURVEYING LTD.
(OU)	DENOTES ORIGIN UNKNOWN
(WIT.)	DENOTES WITNESS
(P1)	DENOTES PLAN 35R-27048
(P2)	DENOTES PLAN 35R-23228
(P3)	DENOTES PLAN 35R-16673
(P4)	DENOTES PLAN 35R-6367
(P5)	DENOTES REGISTERED PLAN 19
(P6)	DENOTES PLAN OF SURVEY BY H. OLAFSON, O.L.S. DATED: JUNE 29, 1959, ATTACHED TO INSTRUMENT DM27476
-Ø-	DENOTES UTILITY POLE
→/GUY	DENOTES STABILIZING CABLE AND GROUND ANCHOR
—o—	DENOTES OVERHEAD WIRES
—x—	DENOTES FENCING
▭	DENOTES CULVERT
□	DENOTES CATCH BASIN
Ⓜ	DENOTES MANHOLE
⊗	DENOTES WATER VALVE
▣	DENOTES SIGN
○	DENOTES LID
Ⓕ	DENOTES FLAG POLE
EDG	DENOTES EDGE OF GRAVEL

ASSOCIATION OF ONTARIO LAND SURVEYORS
PLAN SUBMISSION FORM
V - 115086

THIS PLAN IS NOT VALID UNLESS IT IS AN EMBOSSED ORIGINAL COPY ISSUED BY THE SURVEYOR
In accordance with Regulation 1026, Section 29(3)

RUDY MAK SURVEYING LTD.
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October 24, 2025

Reference No. 2509-C153

Ted Smith Construction
P.O. Box 221
Bala, Ontario
P0C 1A0

Attention: Mr. Ed Smith

Re: Test Pit Investigation Report
Proposed New Residential Building
1011 Maple Avenue
Town of Bala

Dear Sir,

As requested, we visited the site on September 25, 2025 to carry out a Test Pit Investigation for an assessment of the subsurface conditions and to determine the engineering properties of the disclosed soils. Our findings and recommendations are presented herein.

The field work consisted of 7 (seven) test pits dug by an excavator to a depth of 1.0 to 3.2 +/- m throughout the proposed building location.

Test Pit 1	Test Pit 2	Test Pit 3
20 cm organics	30 cm organics Clay fill with organics 0.8m	30 cm organics Clay fill with organics 0.6m
Clay fill with organics	Loose sandy silt	Loose sandy silt
End 1.0 m granite bedrock	End 2.1 m granite bedrock	End 3.2 m granite bedrock

Test Pit 4	Test Pit 5	Test Pit 6
20 cm organics Clay fill with organics 1.0m	20 cm organics Clay fill with organics 0.8m	20 cm organics Clay fill with organics 0.5m
Loose sandy silt	Loose sandy silt	Loose sandy silt
End 1.8 m granite bedrock	End 1.5 m granite bedrock	End 1.4 m granite bedrock

Test Pit 7
20 cm organics Clay fill with organics 1.0m
Loose sandy silt
End 1.5 m granite bedrock

Groundwater seepage was encountered at the bedrock elevations. The groundwater yield is expected to be moderate in rate limited in quantity and subject to seasonal fluctuations.

Foundation

Based on the test pit findings, it is recommended that the normal spread and strip footings can be placed on the sound natural granite bedrock or on engineered fill consisting of Granular 'B' Type II.

As a guide, a Factored Ultimate Soil Bearing Pressure (ULS) of 2000 kPa can be used for the design of the foundations founded on the granite bedrock. The foundations founded on bedrock should be designed to resist a minimum earthquake force using Site Classification 'B' (Rock).

Foundations founded on an engineered Granular 'B' Type II base, a Maximum Allowable Soil Bearing Pressure (SLS) of 150 kPa and a Factored Ultimate Soil Bearing Pressure (ULS) of 300 kPa can be used for the design of the foundations founded on the engineered Granular 'B' Type II base.

Foundations founded on engineered Granular 'B' Type II base should be designed to resist a minimum earthquake force using Site Classification 'D' (Stiff Soil).

The estimated total and differential settlement for foundations founded on granular are estimated at 20 mm and 10 mm, respectively.

The normal spread and strip footings must be properly reinforced and designed by a qualified structural engineer, architect or designer.

The footing subgrade must be inspected by either a geotechnical engineer, or a geotechnical technician under the supervision of geotechnical engineer, or a building inspector who has geotechnical knowledge, to ensure the subgrade conditions are compatible with the foundation design requirements.

Foundations exposed to weathering and in unheated area should have at least 1.6 m of earth cover for protection against frost action or they must be properly insulated.

The slab-on-grade floor slabs should be placed on a granular base 20 cm thick, consisting of 19-mm Crushed Granite, or equivalent.

Engineered Fill & Slab-on-Grade

The organics, earth fill and loose sandy silt must be removed down to the sound granite bedrock for the entire building footprint extending 2.0 m beyond the building perimeter. The material for raising the grade should consist of Granular 'B' Type II or approved equivalent and must be compacted to 100% of its Maximum Standard Proctor dry density up to the proposed underside of footing elevation or slab elevations.

Prior to placement of engineered fill, the subgrade must be inspected by either a geotechnical engineer, or a geotechnical technician under the supervision of geotechnical engineer, to ensure the subgrade conditions are compatible with the foundation design requirements.

We trust this report is explicit: however, should any queries arise, please do not hesitate to contact us.

Yours very truly,
SOIL ENGINEERS LTD.

Mika Fager, Geo.Tech.
Branch Manager – Muskoka North | Partner

Peng Gao, P.Eng.



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MORGAN Planning & Development Inc.



Official Plan Amendment & Zoning By-law Amendment Planning Justification Report

To:	Township of Muskoka Lakes
Attention:	Emily Crowder, Senior Planner
From:	James Hunter, Senior Planner, BURPL, MCIP, RPP Joshua Morgan, MCIP, RPP
Date:	April 2026
Subject Property:	1011 Maple Avenue Bala Legion Project Township of Muskoka Lakes

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1.0 INTRODUCTION

MORGAN Planning & Development Inc. (MP&D) has been retained by **The Royal Canadian Legion Bala – Branch 424** (the Landowner/Applicant Group) to conduct a comprehensive review of the applicable land use planning policy framework for the subject property and to provide professional planning advice on the suitability and feasibility of redeveloping the lands.

Following the completion of the initial policy analysis, MP&D was further retained to prepare this Planning Justification Report (PJR) in support of the proposed development. MP&D has also been engaged to lead the planning process, including the coordination and facilitation of the required Planning Act applications, in consultation with municipal staff, agencies, and stakeholders, with the objective of securing all necessary development approvals.

The lands subject to the applications are municipally known as **1011 Maple Avenue**, located within the community of Bala in the Township of Muskoka Lakes.

The site currently contains a one-storey brick-sided building, which houses the Bala Legion, known as the Royal Canadian Legion – Branch 424. The building has served the local community since 1946, providing a gathering space for veterans, community events, and social activities.

The proposed development seeks to redevelop the site for a **rental apartment building**, introducing a residential use that is compatible with the surrounding neighbourhood. In addition, a **new Legion space** is proposed at grade, providing an enhanced gathering and event space that honours and reinforces the historical significance of the lands, while supporting continued community use.

The proposal is carefully designed to balance the preservation of the site's cultural and community role with contemporary housing objectives, delivering much-needed rental housing while maintaining a strong connection to the site's legacy. Through thoughtful site planning and design, the development will integrate sensitively with the existing context, contributing to a cohesive, vibrant, and sustainable community within Bala.

To advance the proposed development, Official Plan Amendment (OPA) and Zoning By-law Amendment (ZBA) applications are required. These applications are intended to establish the appropriate land use designations and zoning regulations necessary to guide the orderly and coordinated development of the subject lands.

This PJR has been prepared to provide an overview of the development proposal and to assess the subject applications in the context of applicable Provincial and Municipal policies, providing the rationale in support of the requested approvals.

2.0 SUBJECT LANDS - OVERVIEW

The lands subject to the applications are municipally known as 1011 Maple Avenue, located within the community of Bala and within the Township of Muskoka Lakes.

The subject property comprises approximately 7,725.65 m² (1.91 acres or 0.77 hectares) of landholding, with 47.7 metres (165.7 feet) of frontage along Maple Avenue to the west.

The rear portion of the site is largely cleared, with scattered boundary trees remaining along the property edges. An internal access road runs from Maple Avenue through the site, providing a connection to adjacent lands to the east.

The site currently contains a one-storey brick-sided building, which houses the Bala Legion, known as the Royal Canadian Legion – Branch 424.

The subject lands are illustrated on ***Figure 1***, and site photos showing existing conditions and adjacent uses are included in ***Appendix D.***

3.0 SUBJECT LANDS – HISTORICAL IMPORTANCE

According to online sources, over 650,000 Canadians served in the First World War. While returning veterans were welcomed as heroes, many faced significant challenges in accessing medical care, financial support, and social services. In response, veterans organized local associations, which ultimately laid the foundation for the Royal Canadian Legion, formally established in 1925 and incorporated in 1926. Today, the Legion is Canada's largest veterans' support and community service organization, uniting veterans' groups, advocating for veterans' rights, and promoting remembrance.

The history of Legion Branch 424 in Bala dates to May 1946, when it received its official charter from the Royal Canadian Legion. However, the branch notes that their origins trace back to the fall of 1945, when fifteen veterans met at the New Windsor Hotel in Bala, shortly after the end of the Second World War, to explore forming a local branch. Following a second meeting in November 1945 with additional veteran comrades, a formal application was submitted to the Royal Canadian Legion in Ottawa, resulting in the establishment of the Bala branch, which has served the community for nearly 80 years.

Two members of the applicant group, Dennis Mills and Lou Gallucci, hold key leadership roles within the local Legion as President/Chairman and Property and New Building Chair, respectively.

Given the historical and ongoing importance of the Legion, the proposed development seeks to honor this legacy while integrating new opportunities for community engagement. The project

aims to balance the historic significance of the Bala Legion with contemporary needs, creating a model for future development that celebrates and preserves its heritage.

4.0 LOCATION

Northern Context and Land Use

Immediately north of the site, the Bala Arena serves as a key recreational facility, offering a focal point for community events and activities. The surrounding area is predominantly low-density residential, characterized by single-family homes along Aberdeen Street and North Burgess Avenue, reflecting the town's traditional neighborhood fabric. Scattered commercial uses are present along Muskoka Road 169, providing convenient local services and amenities for residents. To the north-east, the water treatment plant on Elm Street represents a critical municipal infrastructure facility.

The street network in this area is primarily a gridded pattern, with sidewalks and driveways connecting individual homes to the local road system, promoting a pedestrian-friendly environment and supporting safe and convenient access to both residential and community uses.

This combination of residential, recreational, commercial, and municipal functions establishes a balanced northern context, contributing to the overall character and functionality of the site's immediate surroundings.

Eastern Context and Land Use

To the east of the site, the surrounding area transitions from primarily residential uses to a more diverse mix of commercial, institutional, and recreational functions. Immediately adjacent, the lands accommodate commercial establishments, including Muskoka Lumber and Bala Freshmart, which serve both local residents and visitors. The Bala Fire Station, located northeast along Grey Street, provides a critical community service, enhancing public safety in the vicinity. Additionally, the nearby Bala Curling Club reflects the recreational and social amenities available to residents, contributing to the community's active lifestyle.

Further east, commercial activity intensifies, particularly along Weismiller Street and Mill Street, forming part of the town's primary commercial corridor along Highway 169. This corridor supports a range of retail, service, and institutional uses, creating a more urbanized streetscape compared to the predominantly residential areas west of the site.

The street network in this area is correspondingly more varied, consisting of narrower local streets that feed into wider, higher-capacity commercial arteries, facilitating both vehicular and pedestrian movement while supporting the area's mixed-use character.

Southern Context and Land Use

To the south, the site transitions into a waterfront residential area, where homes are oriented toward the Moon River and Bala Bay, capitalizing on scenic lake views and direct waterfront access. This area is complemented by a range of public amenities, including the Moon River Dock, Bala Falls, and adjacent recreational spaces, which contribute to the area's scenic character and high community value. A limited number of commercial properties are located along the waterfront, primarily serving tourism and local recreational activity, alongside institutional uses such as a church and supporting public parking near the southern intersection of Portage Street.

The street network in this southern portion is characterized by narrower streets that often terminate at the water's edge, reflecting the historic layout and recreational focus of the waterfront. This combination of natural, residential, recreational, and limited commercial uses reinforces the area's unique character, creating a visually appealing and community-oriented southern context for the site.

Western Context and Land Use

To the west, the site is bordered by a mix of residential and public/community uses. Public parking along Maple Avenue, immediately adjacent to the site, provides support for the Bala Arena as well as nearby commercial establishments. The Public Library on Victoria Street adds a civic and cultural dimension, offering accessible community services within walking distance.

The surrounding residential neighborhoods are modest in scale and characterized by mature vegetation and a mix of single-family homes, creating a quiet, well-established buffer between the site and the more active commercial areas. A small cluster of commercial properties along Victoria Street provides local retail and service functions, reinforcing the neighborhood's mixed-use character while maintaining a predominantly residential atmosphere.

The existing land uses surrounding the subject lands are illustrated on ***Figure 2.***

Figure 1. Subject Lands



Source: Muskoka Maps, GIS

Figure 2. Surrounding Land Uses



Source: Muskoka Maps, GIS

5.0 OVERVIEW OF DEVELOPMENT PROPOSAL

5.1 Purpose of Application

The purpose of the subject Official Plan Amendment (OPA) and Zoning By-law Amendment (ZBA) applications is to facilitate the redevelopment of the subject lands to permit a mixed-use residential development consisting of a rental apartment building integrated with community-serving uses.

The proposal introduces a compact and efficient built form that is compatible with the surrounding neighbourhood while optimizing the use of underutilized land within the Bala settlement area.

A key component of the proposal is the incorporation of a new Royal Canadian Legion facility at grade. This element represents a continuation and enhancement of the site's longstanding role as a community hub, providing a modernized and purpose-built space for gathering, events, and services, while maintaining the cultural and historical significance of the Legion within Bala.

5.2 Development Summary

The proposed development consists of a four (4) storey mixed-use building comprising 128 residential units and a gross floor area (GFA) of approximately 11,557 m², with a total residential building area of approximately 11,206.8 m² (117,746 sq ft).

The residential component includes a mix of unit types, including:

- 1-bedroom units
- 1-bedroom plus office (den) units
- 2-bedroom units
- 2-bedroom plus office (den) units
- Barrier-free accessible units

The unit mix supports a range of household types and tenure needs, with approximately 53% one-bedroom units and 47% two-bedroom units, providing a balanced and flexible housing offering. Units are designed with functional layouts, private balconies, and generous glazing to maximize natural light and comfort.

5.3 Community & Non-Residential Uses

A defining feature of the proposal is the integration of community-oriented uses at grade, reinforcing the site's historic role as a local gathering place and enhancing its function as a community destination.

A Royal Canadian Legion facility is proposed along the Maple Avenue frontage, with a gross floor area of 930.8 m² (10,020 sq ft). The Legion is designed as a highly visible and accessible public-facing use, with a prominent entrance and strong street presence. The space includes a lounge/bar, restaurant area, and a large ceremonial hall designed to accommodate a range of functions including community events, meetings, and celebrations. A movable partition system allows the ceremonial hall to be configured for both small and large gatherings, supporting flexible programming and long-term adaptability.

A medical clinic is also proposed at grade on the south side of the building, located behind the Legion space and accessed via a dedicated entrance. The clinic will have a gross floor area of approximately 86.4 m² (930 sq ft), reflecting a small-scale facility intended to accommodate one to two practitioners. It is designed to serve both building residents and the broader community, providing convenient and accessible primary healthcare services within the Urban Centre. At this scale, the clinic is anticipated to include approximately two to four examination rooms, a reception and waiting area, and a universal (barrier-free) washroom. The compact and efficient layout supports day-to-day clinical operations while ensuring appropriate accessibility and functionality for a neighbourhood-level medical service.

Together, the Legion and Medical Clinic uses establish a strong mixed-use character at grade, integrating residential living with social, cultural, and essential service-oriented functions, and reinforcing the role of the development as a community-serving hub.

5.4 Site Design, Access, & Circulation

The site has been designed to efficiently accommodate residential, community, and servicing functions through a clear and coordinated layout.

Separate and clearly identifiable entrances are provided for the Legion and residential components to ensure operational clarity and minimize user conflict. The Legion benefits from direct pedestrian access from Maple Avenue, supporting an active and animated street frontage, while the residential entrance is oriented to provide convenient access from the east side of the site.

Vehicular access is provided from Maple Avenue, with internal circulation designed to accommodate resident parking, visitor access, and service and loading functions. A total of 56 parking spaces are provided on-site, including barrier-free spaces, with parking located primarily behind and beneath the building to minimize visual impact on the public realm.

Opportunities for shared or off-site parking continue to be explored with adjacent properties to support visitor demand and improve overall parking efficiency.

A secondary access connection is proposed along the east side of the site, linking a future extension of Victoria Street to Mill Street. This connection improves site permeability, supports emergency access, and contributes to a more connected local street network.

5.5 Building Organization & Design

The building is organized to respond to existing grade conditions, incorporating a partially below-grade Level P1 that accommodates parking, bicycle storage, building storage, and the primary residential lobby and concierge space. The integration of grade changes allows for efficient separation of functional uses while maintaining strong building accessibility.

At grade (Level 1), the building accommodates both residential units and community uses, including the Legion and Medical Clinic. The Legion is positioned as a prominent architectural feature with a glazed façade and warm material palette, reinforcing its visibility and civic presence along Maple Avenue. A defined entrance sequence leads into a central gathering space anchored by lounge and dining functions, strengthening its role as a social hub.

A Grand Ceremonial Hall is located adjacent to the primary Legion space and is designed as a flexible multi-purpose area capable of hosting events, ceremonies, conferences, and meetings. The space may be subdivided or combined through a movable partition system to accommodate varying program needs.

Supporting uses, including administrative space and the Medical Clinic, are also located at grade. While the Legion and residential components are functionally distinct, internal connectivity is provided to support operational efficiency and ease of movement.

Levels 2 through 4 are dedicated to residential uses and are organized around central interior corridors. The residential floors are designed to provide efficient circulation, consistent unit layouts, generous glazing, and private outdoor balconies.

The building maintains a four-storey form with an overall height ranging from approximately 19 to 21 metres, depending on existing grade conditions. This height supports appropriate residential intensification while remaining compatible with the surrounding context and maintaining a consistent four-storey built form.

5.6 Attainable & Inclusive Housing

The proposed development includes a significant attainable housing component, with approximately 33% of the total units (approximately 42 units) intended to be offered at affordable or attainable rates. This provides a meaningful contribution to local housing needs and supports a diverse range of household types.

The development also incorporates accessibility and universal design principles. Barrier-free common areas are provided throughout the building, including lobbies, corridors, and shared amenity spaces. In addition, approximately 20% of residential units (approximately 27 units) are designed to be barrier-free, supporting long-term adaptability and housing inclusivity.

5.7 Sustainability & Landscape Design

The development incorporates sustainable design features intended to improve environmental performance and operational efficiency. These include opportunities for green roof areas and rooftop solar panels, supporting reduced energy demand and enhanced building performance.

Landscaping is integrated throughout the site, including perimeter buffering to provide visual screening, enhance privacy for adjacent properties, and contribute to a high-quality streetscape. A combination of soft and hard landscaping elements is used to support both aesthetic and functional site objectives.

5.8 Servicing & Stormwater Management

The development will be fully serviced by municipal water and sanitary infrastructure. All services will be designed in accordance with applicable municipal standards to ensure adequate capacity and long-term reliability.

Stormwater management will be addressed through a comprehensive system designed to control both the quantity and quality of runoff. On-site collection and conveyance infrastructure will ensure post-development flows are appropriately managed and do not negatively impact downstream systems.

Supporting analysis prepared by PEL Engineering confirms that sufficient infrastructure capacity exists to accommodate the proposed development and that all servicing requirements can be met.

5.9 Implementation & Approvals

Following approval of the OPA and ZBA, the development will proceed through Site Plan Control and subsequent Building Permit approvals. A Demolition Permit will also be required for the removal of existing structures.

Additional agreements, such as Site Alteration or Pre-Servicing Agreements, may be required to support implementation and ensure coordinated development delivery.

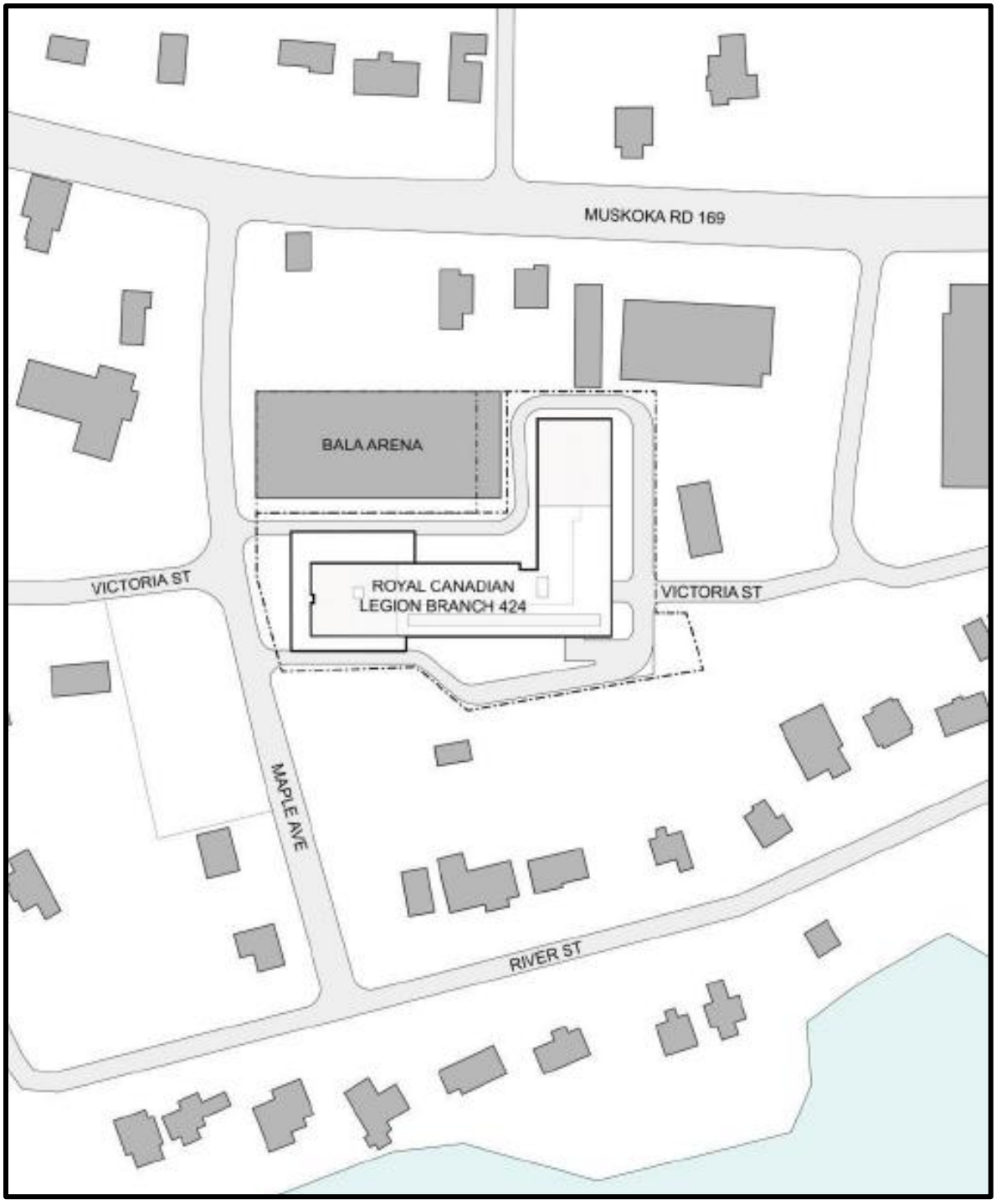
These subsequent stages will involve detailed design review and refinement to ensure full compliance with municipal planning, urban design, and engineering standards.

5.10 Funding & Delivery

The project is supported through a structured funding and approval process involving multiple levels of the Royal Canadian Legion organization, including local branch endorsement, district coordination, and final approval through Ontario Command. This process enables access to Canada Builds funding and ensures alignment with organizational requirements.

This multi-tiered framework ensures the project reflects local community support while satisfying broader institutional and funding criteria, supporting successful implementation.

Figure 3. Site Context Plan



Source: WZMH

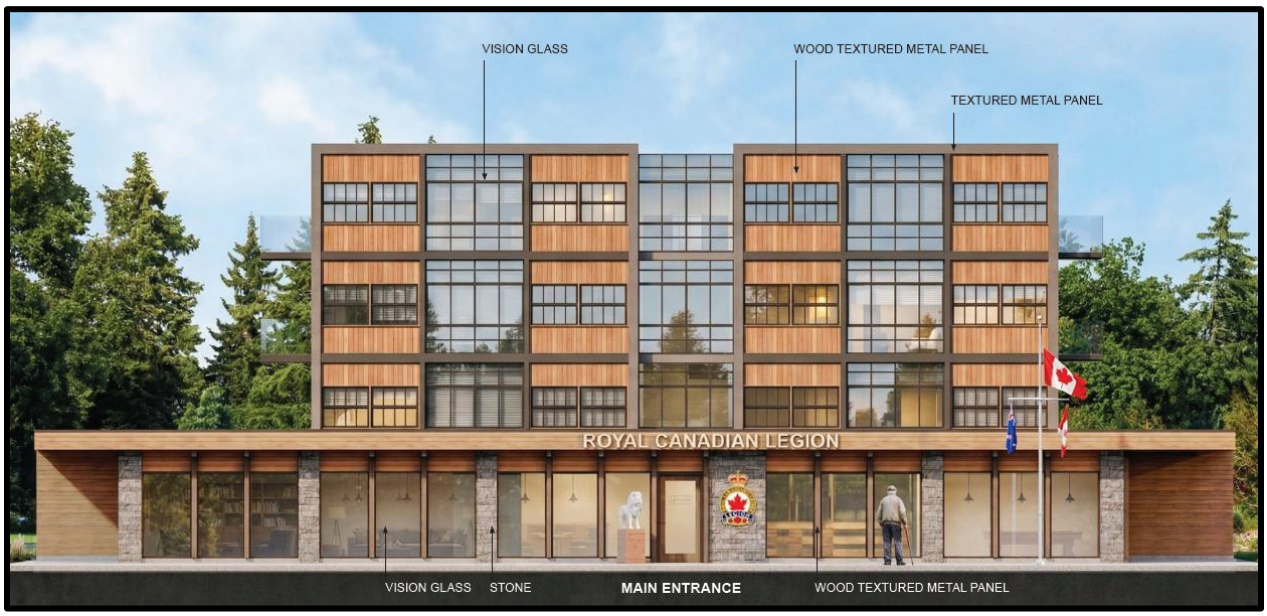
Figure 4. Site Plan



Source: WZMH

Figure 5. Conceptual Site Renders





Source: WZMH

Figure 6. Building Elevations





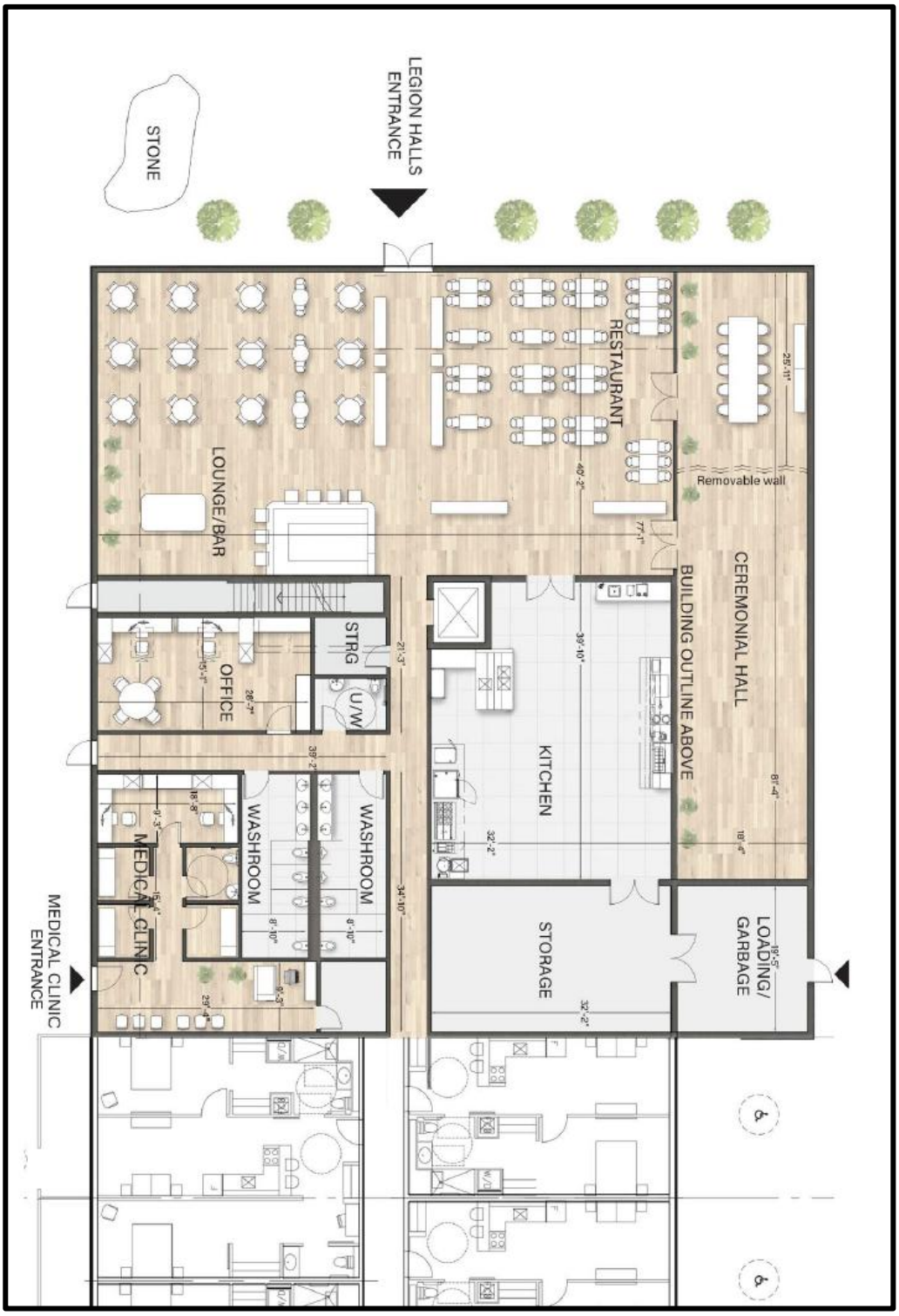
Source: WZMH

Figure 7. Level 1 Floor Plate – Legion Space Identified



Source: WZMH

Figure 8. Legion Layout – Conceptual Floor Plan



Source: WZMH

6.0 CONSULTATION

Prior to submitting the formal applications, the Applicants and Landowner Group undertook an extensive and proactive consultation process with the Township of Muskoka Lakes, the District Municipality of Muskoka, relevant provincial staff, and the Royal Canadian Legion. This multi-level engagement ensured that the proposed development responds comprehensively to planning policies, technical requirements, and community interests.

A pre-consultation meeting with the Planning Department of the Township of Muskoka Lakes was held on December 16, 2025, to review the proposed development concept, site context, and applicable policy framework.

This was followed by a consultation meeting with the District Municipality of Muskoka on January 14, 2026, which addressed district-level requirements, coordination considerations, and alignment with broader municipal objectives.

In addition to these formal meetings, ongoing discussions were held through telephone calls, emails, and virtual meetings with Township and District staff, provincial agencies, and the Bala Legion, ensuring that technical requirements, site constraints, and operational and community considerations were appropriately addressed throughout the process.

The feedback and technical requirements received through the pre-consultation process have been carefully reviewed and integrated into the preparation of the subject applications. This includes applicable policy direction, site-specific technical considerations, and comments from reviewing agencies, resulting in a comprehensive and policy-aligned submission. Collectively, the supporting materials assess the proposed development in relation to applicable planning policies, existing site conditions, and servicing capacity. They also identify and address potential constraints, demonstrating that the proposed development can be appropriately accommodated from a land use compatibility, environmental, transportation, and engineering perspective.

MORGAN Planning & Development Inc. (MP&D) maintained continuous and collaborative correspondence with municipal, district, provincial, and agency staff, as well as the Royal Canadian Legion, up to the time of submission. This proactive and multi-faceted consultation approach has ensured that all stakeholder input was thoughtfully integrated into the final application package, resulting in a development proposal that is responsive to community needs, consistent with planning policies, and reflective of the operational and historic significance of the existing Legion facility.

7.0 APPROVALS HISTORY: ZONING BY-LAW 2017-104

Zoning By-Law 2017-104 was passed by the Township of Muskoka Lakes on October 13, 2017, amending Zoning By-Law 2014-14 to provide site-specific provisions for lands owned by the Royal Canadian Legion in Concession B, Part Lot 14 (Former Town of Bala).

The by-law was intended to facilitate the construction of a four-story retirement home attached to the existing Legion building.

The by-law rezoned the lands from Institutional (I) to Institutional-Holding (I-H). The "Holding" designation prevented the construction of any new buildings until a further by-law removed it, contingent upon the execution of a development agreement with the District Municipality of Muskoka and confirmation of a contiguous parcel.

Specific amendments included:

- The maximum lot coverage for the retirement home was set at 67%.
- The minimum interior side yard setback for a parking structure was set at 8 feet.
- The maximum building height was reduced to 55 feet and 4-storeys in response to concerns from neighboring residents.
- Other site-specific provisions, including loading spaces, were adjusted to accommodate the proposed development.

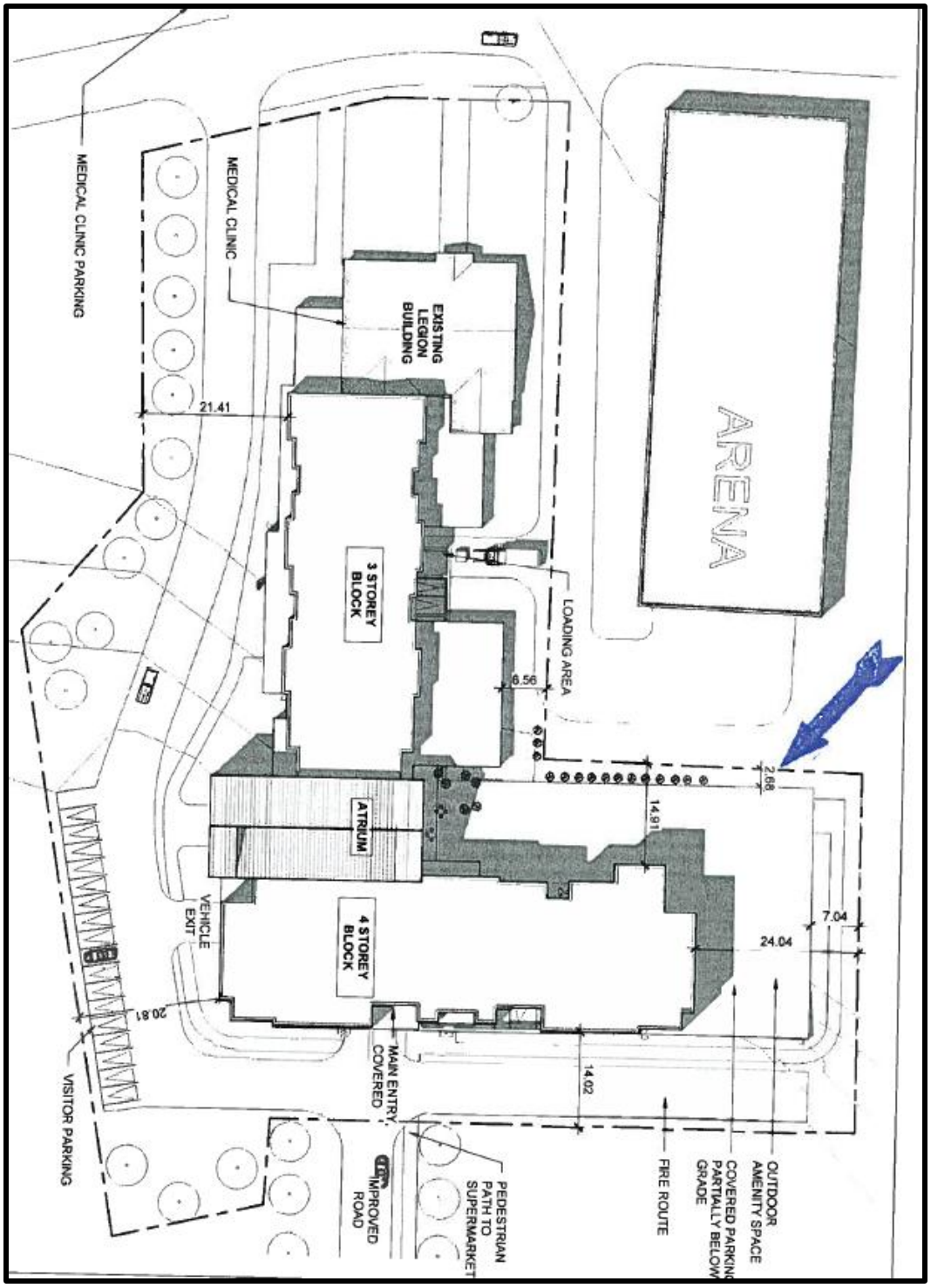
A public notice advised that appeals had to be filed with the Township Clerk by November 13, 2017. Copies of the by-law and additional information were available through the Township's Planning Department.

Upon its passing, By-Law 2017-104 established a regulatory framework for the redevelopment of the site, balancing the operational needs of the Legion, the proposed retirement home, and the interests of the surrounding community.

The full by-law is included in the appendices of this report for reference.

Since the approval of By-Law 2017-104, market conditions, housing demand, and community priorities have shifted substantially, prompting a deliberate pause in advancing the previously approved development. The application and associated redevelopment were strategically held to allow for a reassessment of the site and design, ensuring that any new proposal would align with contemporary planning policies, respond to current housing needs, and support the long-term interests of the Bala community.

Figure 9. Approved Site Plan - Zoning By-Law 2017-104



Source: Paradigm (Zoning By-Law 2017-104)

8.0 PLANNING OVERVIEW

District of Muskoka Official Plan

The District of Muskoka Official Plan (June 2025) designates the subject lands as follows:

- Schedule A – Land Use Designations: ***'Urban Centre'*** (Bala)
- Schedule B – Urban Service Areas: ***'Full Service Area'*** and within the ***'Bala Urban Centre Boundary'***

Township of Muskoka Lakes Official Plan

The Township of Muskoka Lakes Official Plan (2023) designates the subject lands as follows:

- Schedule A – Land Use: '***Urban Centres and Community Areas'***
  - ***Bala Urban Centre***
- Schedule B2 – Bala Land Use: ***'Institutional'***
  - ***'Bala Settlement Area'***

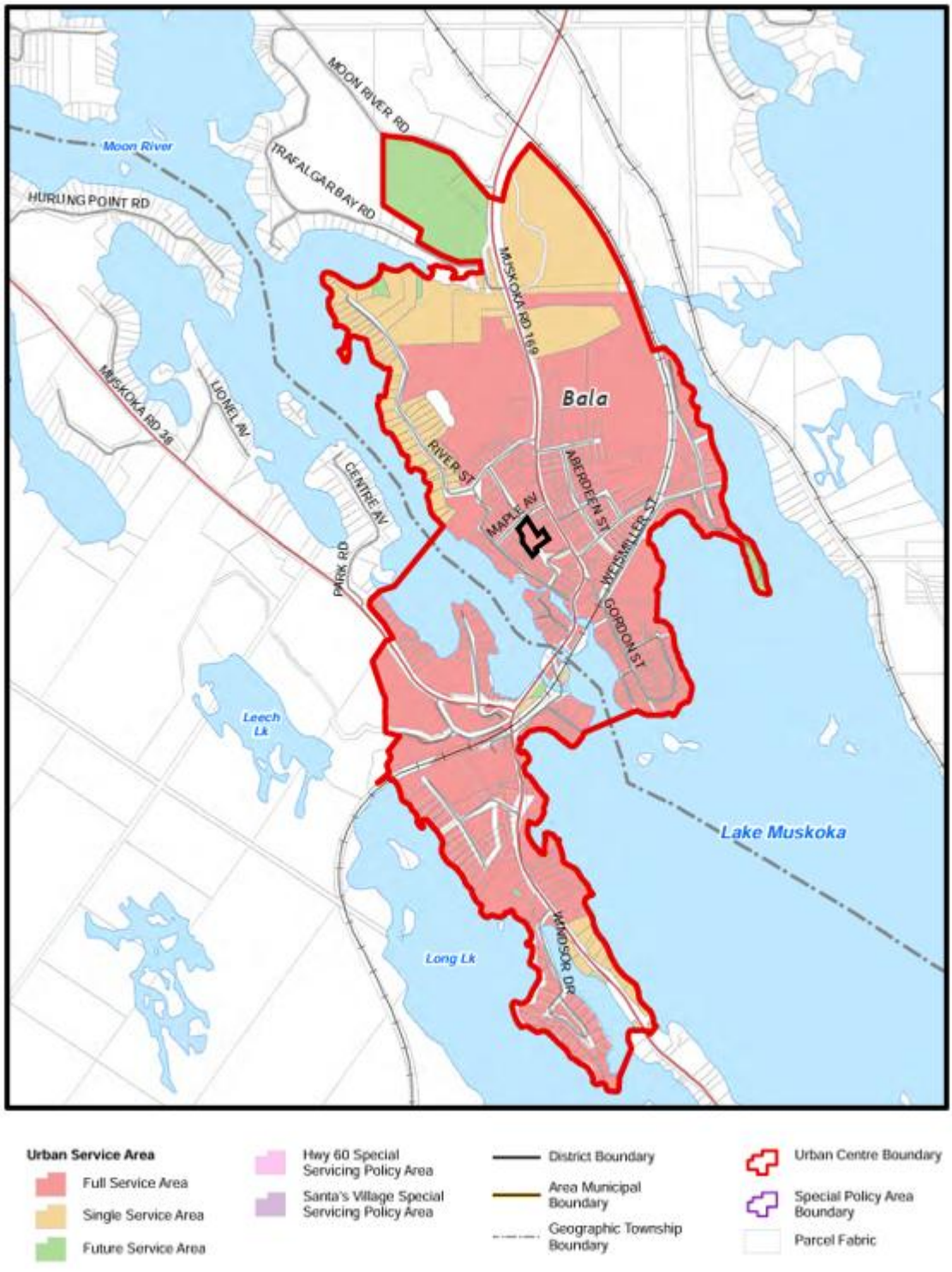
Township of Muskoka Lakes Zoning By-law

The Township of Muskoka Lakes Zoning By-law (2014-14) zones the subject lands as follows:

- ***'Institutional (I) – Exemption (87-1781)'***

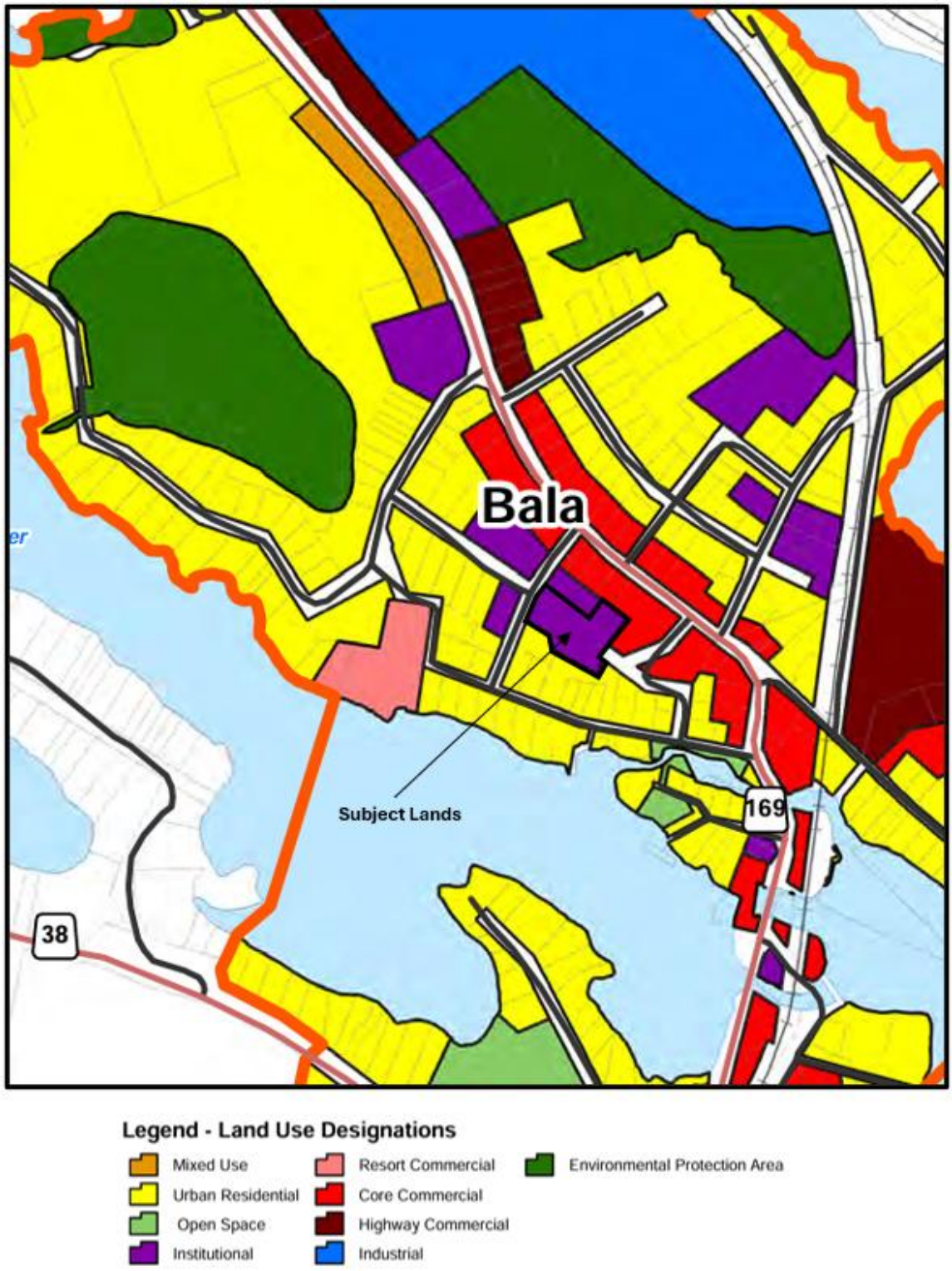
The land use designations and zoning are illustrated on ***Figures 10, 11, and 12.***

Figure 10. Muskoka Official Plan – Urban Service Areas



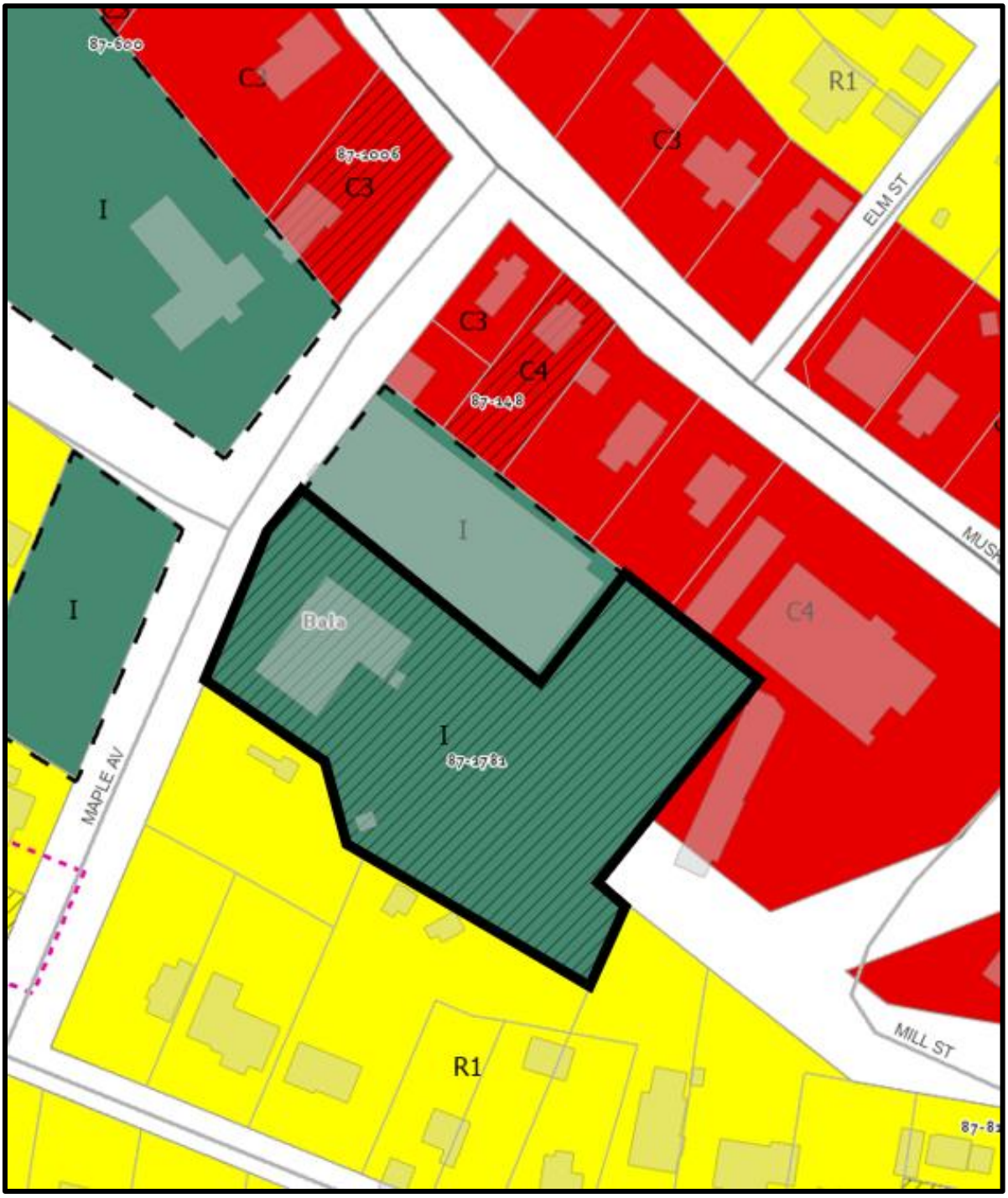
Source: Muskoka Official Plan – Schedule B: Urban Service Areas

Figure 11. Muskoka Lakes Official Plan – Land Use



Source: Official Plan Schedule B2: Bala Land Use

Figure 12. Muskoka Lakes – Zoning By-law Schedule



Source: Muskoka Lakes Web Map – Zoning 2.0

9.0 PLANNING INSTRUMENTS

Official Plan Amendment Application (OPA)

An Official Plan Amendment (OPA) is required to facilitate the proposed redevelopment of the subject lands and ensure that the applicable land use permissions align with the overall development vision.

The OPA proposes to redesignate the subject lands from ***'Institutional'*** to '***Urban Residential – Exception',*** reflecting the transition of the property from its historic institutional use to a residential intensification opportunity within the Bala Urban Centre.

The amendment will permit a mixed-use development comprised of a residential apartment building integrated with community-serving uses, including the Bala Legion and a small-scale medical clinic. This approach supports a compact and efficient built form while enabling a compatible mix of residential and institutional uses that contribute to complete community objectives, improve access to local services, and maintain the site's established social and cultural role within the community.

In addition**, an amendment to Policy I.4.1.2.3(e) is required to permit a density exceeding the current maximum of 70 units per gross hectare**. The proposed development, on a site of approximately 0.77 hectares, will accommodate 128 residential units, representing a density of approximately 166 units per hectare. An exception is therefore necessary to recognize and authorize the proposed level of intensification.

Overall, the OPA establishes a revised policy framework that enables the proposed Urban Residential use and associated density while remaining consistent with the broader intent of the Official Plan to direct growth and intensification to serviced settlement areas such as the Bala Urban Centre.

The amendment is administered by the Township, with the District Municipality serving as the approval authority.

A detailed planning rationale is provided throughout this report, and a draft Official Plan Amendment, including the associated schedule, is included as ***Appendix B.***

Zoning By-law Amendment Application (ZBA)

The purpose of the Zoning By-law Amendment (ZBA) application is to rezone the subject lands to a site-specific '***Multiple Residential High Density – Exception (RM2-XX)' – Sewer and Water Zone***, in order to facilitate the proposed development.

The application proposes to repeal the existing site-specific zoning permissions established under Zoning By-law 2017-104, and replace them with a new, updated zoning framework that reflects the current development concept and policy context.

The proposed RM2-XX Zone will permit a high-density residential apartment building, while also allowing for commercial uses (i.e., the Legion space and medical clinic) at grade, maintaining the longstanding community function of the site.

The site-specific zoning provisions will establish appropriate development regulations and performance standards, including but not limited to permitted uses, building height, density, lot coverage, parking requirements, and other site-specific provisions, as necessary to implement the development in an orderly, functional, and coordinated manner. These provisions are intended to ensure that the proposed development is compatible with the surrounding context while achieving the broader planning objectives of intensification, housing diversity, and community integration.

Further details regarding the proposed zoning provisions are provided in the subsequent sections of this report.

In this regard, the proposed Zoning By-law Amendment is appropriate, represents good planning, and is in the public interest.

A Draft Zoning By-law Amendment is included as ***Appendix C.***

10.0 PLANNING ANALYSIS

In formulating the planning rational for the proposed development, the following documents have been reviewed in their entirety:

- The Planning Act (1990)
- Provincial Planning Statement (2024)
- District of Muskoka Official Plan (June 2025)
- Township of Muskoka Lakes Official Plan (2023)
- Township of Muskoka Lakes Zoning By-law (2014-14)

The following subsections provide further detail of the most salient policies related to the proposed development.

10.1 THE PLANNING ACT, R.S.O. 1990, CHAPTER P.13

The Planning Act (the Act) is provincial legislation that outlines the framework for land use control, specifying who is responsible for managing land use decisions. The Act supports sustainable development by balancing economic growth, environmental preservation, and the creation of healthy communities, all within a provincial framework that prioritizes provincial interests and fairness.

The following table provides an overview of the Provincial Interest as outlined in Section 2 of the Planning Act.

Section 2 of the Planning Act (Provincial Interest)
The Minister, the council of a municipality, a local board, a planning board and the Tribunal, in carrying out their responsibilities under this Act, shall have regard to, among other matters, matters of provincial interest such as;

	MP&D Comment:
(a) the protection of ecological systems, including natural areas, features and functions;	The proposed development will have minimal impact on ecological systems, as the subject lands are fully developed and historically occupied by the Bala Legion, with no significant natural areas or ecological features identified on site. A review of available mapping confirms the absence of sensitive natural features, watercourses, or significant wildlife habitat. Any potential environmental considerations that may arise during development will be addressed in accordance with

	applicable policies and by qualified professionals, ensuring the protection and preservation of ecological functions within and surrounding the site.
(b) the protection of the agricultural resources of the Province;	Not applicable, as the subject lands are located within an urban settlement area, specifically the community of Bala.
(c) the conservation and management of natural resources and the mineral resource base;	A review of available mapping and data indicates that there are no identified natural features or potential mineral resources located on the subject property. Moreover, Settlement Areas, such as the community of Bala, are generally not considered suitable locations for resource extraction, as such activities are typically incompatible with existing urban development and the long-term growth and planning objectives of the community.
(d) the conservation of features of significant architectural, cultural, historical, archaeological or scientific interest;	The subject lands have historically been occupied by the Bala Legion, and the site is fully developed. Given the site's history, the depth of bedrock, and existing land uses, no significant natural or mineral features have been identified. Should any such features be encountered during development, they will be addressed in accordance with applicable policies and standards by a qualified professional.
(e) the supply, efficient use and conservation of energy and water;	The development of the subject lands will be required to proceed through a detailed Site Plan approval process, followed by the issuance of Building Permits and any other applicable regulatory approvals. These subsequent stages will involve a comprehensive technical review to ensure that all relevant planning, engineering, environmental, and energy-related considerations are fully evaluated and addressed. This process will provide additional opportunities to confirm that the development is safe, functional, and consistent with applicable policies and standards.
(f) the adequate provision and efficient use of communication, transportation, sewage and	The subject lands are located within a designated Settlement Area, where full municipal servicing, including water, wastewater, and stormwater management, is available and can be sustainably accommodated. The site is

water services and waste management systems;	well-positioned with direct access to an established road network, which is capable of safely handling the projected traffic volumes associated with the proposed development. In addition, communication and utility services are readily available in the area, supporting the efficient provision of modern infrastructure. The location of the site within an existing Settlement Area promotes compact, sustainable growth by utilizing lands that are already serviced, reducing pressure on undeveloped rural lands, and supporting the orderly expansion of the community. Furthermore, the development is designed to integrate seamlessly with surrounding uses, ensuring compatibility with the character of Bala while contributing to a cohesive, well-planned, and functional neighborhood. Collectively, these factors demonstrate that the subject lands are well-suited for redevelopment and can accommodate the proposed residential use in a manner that aligns with municipal and provincial planning objectives.
(g) the minimization of waste;	The development of the lands will be subject to a formal approval process, during which strategies to minimize waste generation and promote sustainable waste management practices will be carefully reviewed and evaluated. All measures will be considered in accordance with applicable policies, municipal standards, and regulatory requirements, ensuring that the development supports environmentally responsible practices throughout its construction and operation phases.
(h) the orderly development of safe and healthy communities;	The proposed development supports the orderly development of a safe and healthy community by integrating a well-planned residential building within a designated Settlement Area. The site benefits from full municipal servicing, established road access, and readily available utility and communication infrastructure, ensuring that the development can function safely and efficiently. Furthermore, the design incorporates accessible and barrier-free units, attainable housing, and sustainable site practices, all of which contribute to the long-term health,

	safety, and well-being of future residents and the broader Bala community.
(h.1) the accessibility for persons with disabilities to all facilities, services and matters to which this Act applies;	The proposed buildings and built forms will be designed to comply fully with the Ontario Building Code (OBC) and the Accessibility for Ontarians with Disabilities Act (AODA), ensuring that all aspects of the development meet established standards for safety, accessibility, and inclusivity. In addition to accessible common areas, a portion of the residential units—20% of the total units—will be specifically designed to meet accessibility standards, providing barrier-free living options for residents with mobility challenges or other accessibility needs. This approach reinforces the commitment to creating a safe, inclusive, and universally accessible community that accommodates a diverse range of users.
(i) the adequate provision and distribution of educational, health, social, cultural and recreational facilities;	The proposed development supports the adequate provision and distribution of educational, health, social, cultural, and recreational facilities by integrating residential growth within the established community of Bala. The site is located within walking distance or a short drive to existing schools, healthcare services, community amenities, and recreational facilities, ensuring that residents will have convenient access to essential services. Additionally, the redevelopment complements the ongoing operations of the Bala Legion, a local cultural and social hub, reinforcing the availability of community-oriented spaces and supporting the broader social and recreational infrastructure of the area.
(j) the adequate provision of a full range of housing, including affordable housing;	The proposed development makes a significant contribution to the provision of a full range of housing in Bala, addressing both market and community needs. The project includes approximately 33% of the total units as attainable housing, helping to provide options for households that may not otherwise be able to access market-rate housing. This is particularly important in Bala, where there is a recognized shortage of rental and affordable housing options, limiting

	opportunities for young families, seniors, and local workers to remain in the community. In addition to affordability, the development is designed with accessibility in mind. Barrier-free common areas will be incorporated throughout the building, and 20% of units are specifically designed to meet accessibility standards, ensuring that residents with mobility challenges or other special needs can live independently and comfortably. By providing a mix of unit sizes, attainable housing, and accessible design, the proposal supports the creation of a socially inclusive, diverse, and balanced community, aligning with provincial and municipal policies that encourage housing choice, community sustainability, and the long-term retention of residents. The project directly addresses gaps in the local rental market while promoting a vibrant, safe, and well-integrated residential environment for Bala.
(k) the adequate provision of employment opportunities;	The proposed development will contribute indirectly to the provision of employment opportunities by supporting local construction and service sectors during the building and operational phases. The construction of the residential building will generate temporary employment for contractors, trades, and associated service providers. Once completed, the development will help sustain local services, retail, and community-oriented employment, as increased residential occupancy typically supports demand for nearby businesses, municipal services, and cultural or recreational facilities. While the primary function of the site is residential, the development will positively support the local economy and broader employment base in Bala and the surrounding area.
(l) the protection of financial and economic well-being of the Province and its municipalities;	The development of the lands will be subject to all applicable financial obligations and requirements borne by the Owner/Developer, including development charges, servicing costs, and any other related fees. This approach ensures that the Township and Province will not assume financial responsibility for the project. By placing the onus

	for infrastructure funding and associated costs on the developer, the municipality's fiscal exposure is minimized, allowing for the efficient provision of municipal services and infrastructure. This framework ensures the protection of public resources while supporting orderly development that aligns with the long-term economic and financial well-being of both the Township and the Province.
(m) the co-ordination of planning activities of public bodies;	The proposed development has been advanced through a coordinated consultation and pre-application process involving multiple levels of government and public bodies, including the Township of Muskoka Lakes, the District Municipality of Muskoka, relevant provincial agencies, and the Royal Canadian Legion. This collaboration has ensured that all planning, technical, and policy considerations have been addressed in a coordinated manner. Ongoing engagement with these authorities has allowed for the integration of feedback, alignment with municipal and provincial planning objectives, and the identification of site-specific requirements, supporting a streamlined and orderly development process. By fostering collaboration among public bodies, the project demonstrates a commitment to effective coordination, compliance, and alignment with broader planning initiatives.
(n) the resolution of planning conflicts involving public and private interests;	The proposed development has been guided by a proactive approach to resolving potential planning conflicts between public and private interests. Through ongoing consultation with the Township of Muskoka Lakes, the District Municipality of Muskoka, relevant provincial agencies, and the Royal Canadian Legion, the Applicants have addressed operational, technical, and community considerations. Potential conflicts related to land use compatibility, accessibility, traffic, and community impacts have been carefully evaluated and mitigated through site planning, design measures, and adherence to applicable policies. This collaborative and transparent process ensures that the development balances the needs of the private landowners, future residents, and the broader public interest, supporting

	an outcome that is compatible with the surrounding community and consistent with sound planning principles.
(o) the protection of public health and safety;	The proposed development will be designed and constructed in accordance with all applicable regulatory standards, including the Ontario Building Code (OBC), the Accessibility for Ontarians with Disabilities Act (AODA), and relevant municipal and provincial health and safety requirements. The site is fully serviced with municipal water, wastewater, and stormwater infrastructure, and is well-connected to an established road network, ensuring safe access and egress. In addition, the development incorporates barrier-free design, accessible units, and site safety measures to protect the well-being of all residents and users. By adhering to established engineering, building, and planning standards, the project ensures the protection of public health and safety while supporting a functional, resilient, and inclusive community.
(p) the appropriate location of growth and development;	The subject lands are located within the designated Settlement Area of Bala, an area intended to accommodate growth and development in accordance with both provincial and municipal planning policies. The site is well-serviced with municipal water, wastewater, and stormwater infrastructure, and is directly connected to an established road network, making it a logical and sustainable location for residential development. By focusing growth within an existing Settlement Area, the development optimizes the use of available infrastructure, minimizes pressure on rural lands, and supports the orderly and compact expansion of the community. The proposed redevelopment aligns with broader planning objectives, ensuring that growth occurs in a strategically appropriate, efficient, and sustainable manner.
(q) the promotion of development that is designed to be sustainable, to support public	The proposed development is designed to promote sustainability, support active transportation, and enhance pedestrian accessibility. While the site is located within a

transit and to be oriented to pedestrians;	settlement area primarily served by private vehicles, its compact design, accessible building layout, and proximity to local amenities encourage walkability and convenient connections within the community. Sustainable design measures, including efficient site servicing, energy-conscious building practices, and barrier-free access, are incorporated to reduce environmental impacts and promote long-term livability. By integrating these principles, the development supports a more sustainable, connected, and pedestrian-friendly community, consistent with provincial and municipal objectives for responsible growth and sustainable urban form.
(r) the promotion of built form that: *(i) is well-designed,* *(ii) encourages a sense of place, and* *(iii) provides for public spaces that are of high quality, safe, accessible, attractive and vibrant;*	The proposed development promotes a high-quality built form that aligns with contemporary planning and design principles. The buildings are being designed to be well-proportioned, contextually appropriate, and visually coherent, contributing to an aesthetically pleasing streetscape. The development also encourages a strong sense of place by integrating with the surrounding community and respecting the historic and cultural significance of the Bala Legion, thereby creating a distinctive identity for the site within the community. In addition, the proposal incorporates high-quality, safe, and accessible spaces for residents, including barrier-free common areas and landscaped amenities, ensuring that outdoor and communal areas are attractive, functional, and inclusive. By emphasizing design excellence, community integration, and the provision of vibrant and accessible public spaces, the project fosters a welcoming, sustainable, and socially connected environment that enhances the character and livability of Bala.
(s) the mitigation of greenhouse gas emissions and adaptation to a changing climate	The proposed development incorporates measures to mitigate greenhouse gas emissions and support climate change adaptation, in alignment with provincial and municipal sustainability objectives. The building design will incorporate energy-efficient systems, high-performance building envelopes, and sustainable construction practices to reduce operational energy demand and associated

	emissions. Site design considerations, including stormwater management, landscaping, and building orientation, will enhance resilience to changing climate conditions, such as increased precipitation, temperature fluctuations, and extreme weather events. By integrating these strategies, the development supports a low-carbon, climate-resilient built form that promotes long-term environmental sustainability and aligns with broader municipal and provincial climate action goals.

It is the opinion of the undersigned that the proposed development and associated applications have regard for matters of provincial interest.

10.2 PROVINCIAL PLANNING STATEMENT (PPS, 2024)

The Provincial Planning Statement (PPS, 2024) provides policy direction on matters related to land use planning and sets the policy foundation for regulating the development and use of all land in the province.

The most directly applicable policy areas affecting the proposed development are reviewed below.

Section 2.1	Planning for People & Homes
Policy 2.1.4	*To provide for an appropriate range and mix of housing options and densities required to meet projected requirements of current and future residents of the regional market area, planning authorities shall:* *a) maintain at all times the ability to accommodate residential growth for a minimum of 15 years through lands which are designated and available for residential development; and* *b) maintain at all times where new development is to occur, land with servicing capacity sufficient to provide at least a three-year supply of residential units available through lands suitably zoned, including units in draft approved or registered plans.*
MP&D Comment:	The proposed development supports the objective of providing an appropriate range and mix of housing options and densities to meet the needs of both current and future residents of the regional market area.

By redeveloping municipally serviced lands within the designated Settlement Area of Bala, the project ensures that residential growth is directed to a location that can sustainably accommodate population increases. The site is fully serviced with water, wastewater, and stormwater infrastructure, demonstrating that sufficient servicing capacity exists to support the proposed units.

Furthermore, the development contributes to the maintenance of a continuous supply of residential lands, supporting both short-term and long-term housing needs. The inclusion of attainable housing (approximately 33% of units), combined with a mix of unit types and accessibility features, ensures that the project addresses diverse demographic and income groups, consistent with provincial policy. By utilizing designated and serviced lands, the development aligns with the objectives of maintaining a minimum 15-year supply of residential lands and ensuring a three-year supply of units ready for development, in accordance with municipal and regional planning requirements.

Policy 2.1.6 *Planning authorities should support the achievement of complete communities by:*

a) *Accommodating an appropriate range and mix of land uses, housing options, transportation options with multimodal access, employment, public service facilities and other institutional uses (including schools and associated child care facilities, long-term care facilities, places of worship and cemeteries), recreation, parks and open space, and other uses to meet long-term needs;*
b) *improving accessibility for people of all ages and abilities by addressing land use barriers which restrict their full participation in society; and*
c) *improving social equity and overall quality of life for people of all ages, abilities, and incomes, including equity-deserving groups.*

MP&D Comment: The proposed development supports the achievement of complete communities by integrating a mix of residential uses, attainable housing, accessible design, and community-oriented spaces within a fully serviced Settlement Area. The project includes approximately 33% attainable housing units, incorporates barrier-free common areas, and ensures that 20% of units meet accessibility standards, improving accessibility for residents of all ages and abilities.

By locating the development within the community of Bala, the project provides convenient access to existing schools, healthcare services,

recreational facilities, and cultural amenities, thereby supporting a broad range of land uses and institutional services that contribute to a well-rounded and socially inclusive community. The design and unit mix also address social equity and housing diversity, ensuring that households with varying incomes and needs, including equity-deserving groups, are accommodated. Overall, the development contributes to a complete, accessible, and vibrant community, consistent with provincial policy objectives for long-term growth and quality of life.

Section 2.2 Housing

Policy 2.2.1 *Planning authorities shall provide for an appropriate range and mix of housing options and densities to meet projected needs of current and future residents of the regional market area by:*

a) *Establishing and implementing minimum targets for the provision of housing that is affordable to low and moderate income households, and coordinating land use planning and planning for housing with Service Managers to address the full range of housing options including affordable housing needs;*

b) *permitting and facilitating:*
1. all housing options required to meet the social, health, economic and wellbeing requirements of current and future residents, including additional needs housing and needs arising from demographic changes and employment opportunities; and
2. all types of residential intensification, including the development and redevelopment of underutilized commercial and institutional sites (e.g., shopping malls and plazas) for residential use, development and introduction of new housing options within previously developed areas, and redevelopment, which results in a net increase in residential units in accordance with policy 2.3.1.3;

c) *promoting densities for new housing which efficiently use land, resources, infrastructure and public service facilities, and support the use of active transportation; and*

d) *requiring transit-supportive development and prioritizing intensification, including potential air rights development, in proximity to transit, including corridors and stations.*

MP&D Comment: The proposed development aligns with the objectives of Section 2.2 of the Provincial Policy Statement, which encourages planning authorities to

provide an appropriate range and mix of housing options to meet the needs of current and future residents. The project incorporates approximately 33% attainable housing units, ensuring that low and moderate income households have access to safe, affordable housing options. By providing a mix of unit types and sizes, the development also responds to demographic changes and evolving community needs, supporting households at different stages of life and varying income levels.

The redevelopment of the previously developed Bala Legion site represents an example of residential intensification on underutilized institutional land, resulting in a net increase in housing supply while making efficient use of existing infrastructure and services. The site is located within a designated Settlement Area with full municipal servicing, promoting efficient land use and minimizing the need for expansion into rural or undeveloped areas. The building design supports barrier-free accessibility, encourages walkability, and enhances connections to local amenities, consistent with principles of active transportation and sustainable community development.

Overall, the project facilitates a range of housing options, efficiently utilizes existing infrastructure, and supports long-term growth in a sustainable, accessible, and socially inclusive manner, fully consistent with provincial housing policy.

Section 2.3 Settlement Areas

Policy 2.3.1.1 *Settlement areas shall be the focus of growth and development. Within settlement areas, growth should be focused in, where applicable, strategic growth areas, including major transit station areas.*

MP&D Comment: The subject lands are located within the designated Settlement Area of Bala, which is identified as the primary focus for growth and development in accordance with provincial and municipal planning policy. By directing the proposed residential development to a fully serviced, compact, and established community, the project optimizes the use of existing infrastructure, minimizes pressure on rural lands, and supports the orderly and efficient expansion of the community.

While the site is not located within a major transit station area, it benefits from established local road networks and accessibility to community services and amenities, ensuring that growth occurs in a sustainable and strategically appropriate location. Concentrating development within the

Settlement Area aligns with the objective of focusing growth where it can be efficiently serviced, contributing to the creation of a vibrant, complete, and well-integrated community.

Policy 2.3.1.2 *Land use patterns within settlement areas should be based on densities and a mix of land uses which:*

a) efficiently use land and resources;
b) optimize existing and planned infrastructure and public service facilities;
c) support active transportation;
d) are transit-supportive, as appropriate; and
e) *are freight-supportive*

MP&D Comment: The proposed development aligns with provincial policies on land use patterns within settlement areas by promoting a compact, efficient, and well-integrated residential form. The project utilizes previously developed lands within a fully serviced Settlement Area, ensuring that land and infrastructure resources are used efficiently. The site's design and density optimize existing municipal servicing, including water, wastewater, stormwater, and utility systems, while ensuring that public service facilities and community amenities are readily accessible.

Although the site is primarily oriented to local roads rather than major transit corridors, the development supports active transportation through walkable connections to nearby schools, services, and recreational facilities. By redeveloping a former institutional site for residential use, the proposal also enhances the overall mix of land uses within the community, contributing to a more complete and sustainable settlement pattern. While the site does not directly serve freight-intensive uses, it maintains compatibility with surrounding land uses and supports orderly, safe, and accessible transportation networks.

Policy 2.3.1.3 *Planning authorities shall support general intensification and redevelopment to support the achievement of complete communities, including by planning for a range and mix of housing options and prioritizing planning and investment in the necessary infrastructure and public service facilities.*

MP&D Comment: The proposed development supports general intensification and redevelopment in Bala, contributing to the creation of a complete and sustainable community. By redeveloping the existing Bala Legion site, the project efficiently utilizes previously developed lands and municipal

infrastructure, reducing the need for expansion into rural or greenfield areas. The proposal includes a diverse mix of residential units, including approximately 33% attainable housing and 20% barrier-free accessible units, ensuring that the development addresses a range of housing needs for current and future residents.

In addition, the site benefits from full municipal servicing and proximity to public services, recreational amenities, and community facilities, allowing for the efficient provision of infrastructure and services. By aligning intensification with existing infrastructure and promoting accessible, inclusive housing, the development supports the long-term sustainability, functionality, and vibrancy of the community, consistent with provincial and municipal policies for complete communities.

Policy 2.3.1.6 *Planning authorities should establish and implement phasing policies, where appropriate, to ensure that development within designated growth areas is orderly and aligns with the timely provision of the infrastructure and public service facilities.*

MP&D Comment: The proposed development is consistent with the principle of orderly, phased growth by ensuring that construction and occupancy align with the timely provision of municipal infrastructure and public service facilities. The site is fully serviced with municipal water, wastewater, and stormwater systems, and its redevelopment will be coordinated with the Township to ensure that any necessary upgrades or connections occur in an efficient and managed manner.

By directing growth to a designated Settlement Area and previously developed site, the project supports orderly development patterns and optimizes the use of existing infrastructure, minimizing the need for costly expansions or extensions. Any future phasing of the development will be planned to maintain service capacity, protect public resources, and ensure that the community continues to function efficiently, consistent with provincial and municipal policies regarding the timing and sequencing of growth.

Section 2.9 Energy Conservation, Air Quality and Climate Change

Policy 2.9.1 *Planning authorities shall plan to reduce greenhouse gas emissions and prepare for the impacts of a changing climate through approaches that:*

a) support the achievement of compact, transit-supportive, and complete communities;

b) *incorporate climate change considerations in planning for and the development of infrastructure, including stormwater management systems, and public service facilities;*
c) *support energy conservation and efficiency;*
d) *promote green infrastructure, low impact development, and active transportation, protect the environment and improve air quality; and*
e) *take into consideration any additional approaches that help reduce greenhouse gas emissions and build community resilience to the impacts of a changing climate.*

MP&D Comment: The proposed development aligns with provincial policies to reduce greenhouse gas emissions and enhance climate resilience through a combination of site planning, building design, and infrastructure considerations. By redeveloping a previously developed site within the designated Settlement Area of Bala, the project contributes to a compact, complete, and walkable community, helping to reduce reliance on private vehicles and supporting opportunities for active transportation.

Infrastructure planning for the site incorporates stormwater management systems and servicing solutions designed to address the impacts of climate change, including increased precipitation and extreme weather events. The building design and construction will utilize energy-efficient systems, high-performance envelopes, and sustainable materials to support energy conservation and efficiency. Landscaping, low-impact development techniques, and green infrastructure elements will protect natural features, manage stormwater, and enhance air quality, while creating a resilient and environmentally conscious community.

Overall, the development demonstrates a comprehensive approach to sustainability, incorporating strategies to reduce GHG emissions, improve climate resilience, and enhance long-term environmental and community performance, consistent with provincial and municipal policy objectives.

Section 3.6 Sewage, Water and Stormwater

Policy 3.6.1 *Planning for sewage and water services shall:*

a) accommodate forecasted growth in a timely manner that promotes the efficient use and optimization of existing municipal sewage services and municipal water services and existing private communal sewage services and private communal water services;

b) ensure that these services are provided in a manner that:

1) *can be sustained by the water resources upon which such services rely; 2. is feasible and financially viable over their life cycle;*
2) *protects human health and safety, and the natural environment, including the quality and quantity of water; and*
3) *aligns with comprehensive municipal planning for these services, where applicable.*

Policy 3.6.2 *Municipal sewage services and municipal water services are the preferred form of servicing for settlement areas to support protection of the environment and minimize potential risks to human health and safety. For clarity, municipal sewage services and municipal water services include both centralized servicing systems and decentralized servicing systems.*

MP&D Comment: The proposed development will be fully serviced with municipal water and wastewater infrastructure, consistent with Section 3.6 of the Provincial Policy Statement. The site is located within a designated Settlement Area of Bala, where municipal services are available and capable of accommodating the forecasted growth associated with the proposed redevelopment. By utilizing existing municipal infrastructure, the project promotes the efficient use and optimization of sewage and water services, while avoiding unnecessary expansion into rural or environmentally sensitive areas.

The servicing approach has been designed to ensure that services are sustainable, feasible, and financially viable over their life cycle, protecting human health and safety as well as the quality and quantity of water resources. The development will also incorporate stormwater management measures to address runoff and safeguard natural features on and adjacent to the site. By relying on municipal services, the proposal aligns with municipal planning objectives, minimizes environmental risk, and supports the orderly and safe growth of the community, consistent with both provincial policy and the Township of Muskoka Lakes Official Plan.

Policy 3.6.8 *Planning for stormwater management shall:*

a) be integrate with planning for sewage and water services and ensure that systems are optimized, feasible and financially viable over the long term;
b) minimize, or, where possible, prevent increase in contaminant loads;

c) *minimize erosion and changes in water balance, and prepare for the impacts of a changing climate through the effective management of stormwater, including the use of green infrastructure;*
d) *mitigate risks to human health, safety, property and the environment;*
e) *maximize the extent and function of vegetative and pervious surfaces; and*
f) *promote stormwater management best practices, including stormwater attenuation and re-use, water conservation and efficiency, and lot impact development.*

MP&D Comment: The proposed development incorporates a comprehensive stormwater management strategy that aligns with provincial policy and best practices. Stormwater planning for the site is integrated with municipal sewage and water services, ensuring that systems are optimized, feasible, and financially viable over the long term. The design incorporates measures to minimize contaminant loads, reduce erosion, maintain the natural water balance, and address the anticipated impacts of climate change.

Green infrastructure and low-impact development techniques will be incorporated to maximize permeable and vegetated surfaces, promote infiltration, and improve stormwater quality. The site plan also includes stormwater attenuation and reuse measures, water conservation strategies, and runoff management practices to protect human health, safety, property, and the environment. By implementing these strategies, the development demonstrates a sustainable and resilient approach to stormwater management, consistent with provincial objectives for environmental protection, climate adaptation, and efficient infrastructure utilization.

Section 3.9 Public Spaces, Recreation, Parks, Trails and Open Space

Policy 3.6.8 *Healthy, active, and inclusive communities should be promoted by:*

a) *planning public streets, spaces and facilities to be safe, meet the needs of persons of all ages and abilities, including pedestrians, foster social interaction and facilitate active transportation and community connectivity;*
b) *planning and providing for the needs of persons of all ages and abilities in the distribution of a full range of publicly-accessible built and natural settings for recreation, including facilities,*

parklands, public spaces, open space areas, trails and linkages, and, where practical, water-based resources;

c) *providing opportunities for public access to shorelines; and*
d) *recognizing provincial parks, conservation reserves, and other protected areas, and minimizing negative impacts on these areas.*

MP&D Comment: The proposed development supports the creation of a healthy, active, and inclusive community in accordance with Section 3.9 of the Provincial Policy Statement. The site design incorporates accessible and barrier-free common areas, landscaped amenity spaces, and pathways to facilitate safe movement and social interaction for people of all ages and abilities. These elements promote active transportation and community connectivity, linking residents to nearby facilities, recreational amenities, and open spaces within the Bala community.

While the subject lands are not directly waterfront, the project maintains visual and physical connections to nearby natural features and open spaces, ensuring that residents benefit from access to recreational and passive green areas. The development also respects the proximity of provincial parks, conservation areas, and other protected natural environments, and incorporates design measures to minimize environmental impacts. By integrating these features, the project contributes to the long-term livability, inclusivity, and sustainability of the community, supporting broader municipal and provincial objectives for complete and vibrant settlement areas.

Section 4 Wise Use and Management of Resources

Policy 4.2.2 *Development and site alteration shall be restricted in or near sensitive surface water features and sensitive ground water features such that these features and their related hydrologic functions will be protected, improved or restored, which may require mitigative measures and/or alternative development approaches.*

MP&D Comment: The proposed development has been designed to protect sensitive surface and groundwater features on and adjacent to the site, ensuring that their hydrologic functions are maintained, improved, or restored. Site planning and servicing strategies incorporate best practices for stormwater management, erosion control, and low-impact development, minimizing potential impacts on water quality and quantity.

Where necessary, mitigation measures and alternative development approaches will be implemented to safeguard natural features, including

buffered setbacks, vegetated swales, and stormwater infiltration areas. The approach ensures that any site alteration or grading will protect both ecological functions and downstream water resources, in accordance with provincial policy and environmental regulations. By integrating these measures, the development demonstrates a responsible, environmentally sensitive, and sustainable approach to site planning.

Section 4.6 Cultural Heritage and Archaeology

Policy 4.6.2/3 *Planning authorities shall not permit development and site alteration on lands containing archaeological resources or areas of archaeological potential unless the significant archaeological resources have been conserved.*

Planning authorities shall not permit development and site alteration on adjacent lands to protected heritage property unless the heritage attributes of the protected heritage property will be conserved.

MP&D Comment: The proposed development has been designed to respect and conserve significant cultural heritage and archaeological resources, in accordance with Policies 4.6.2 and 4.6.3 of the Provincial Policy Statement. A preliminary review of the site indicates that there are no identified archaeological resources or areas of known archaeological potential within the subject lands. Should any previously unknown archaeological resources be discovered during construction, all site alteration and development activities will cease immediately, and mitigation measures will be implemented under the guidance of a qualified heritage professional, in accordance with provincial legislation and standards.

Additionally, the subject lands are not located adjacent to any protected heritage properties, and therefore the development will not impact heritage attributes in the vicinity. By proactively addressing these considerations, the project ensures that cultural heritage and archaeological resources are conserved, while allowing for the orderly and sustainable redevelopment of the site.

Section 5.0 Protecting Public Health and Safety

Policy 5.3 *Development on, abutting or adjacent to lands affected by mine hazards; oil, gas and salt hazards; or former mineral mining operations, mineral aggregate operations or petroleum resource operations may be permitted only if rehabilitation or other measures to address and mitigate known or suspected hazards are under way or have been completed.*

Sites with contaminants in land or water shall be assessed and remediated as necessary prior to any activity on the site associated with the proposed use such that there will be no adverse effects.

MP&D Comment: The subject lands are not located within or adjacent to areas affected by mine hazards, oil, gas, salt hazards, or former mineral or petroleum resource operations. A review of available records and mapping confirms that the site is free from known or suspected natural or industrial hazards.

Given the historical use of the lands for the Bala Legion, there is no indication of contamination; however, any future site works will adhere to applicable environmental standards and regulatory requirements. Should any contaminants in soil or groundwater be identified during site preparation or construction, the Owner/Applicant will ensure that appropriate assessment and remediation measures are undertaken by qualified professionals to eliminate potential adverse effects, consistent with provincial policy and best practices.

By taking these steps, the development ensures that the site is safe for the proposed residential use and aligns with provincial objectives for hazard mitigation and environmental protection.

It is the opinion of the undersigned that the development and associated applications, are consistent with the policy direction provided by the Provincial Planning Statement.

10.3 DISTRICT OF MUSKOKA OFFICIAL PLAN

In accordance with the Planning Act, the District of Muskoka Official Plan contains goals, objectives, and policies established primarily to manage and direct physical change, as well as the effects of such change on the social, economic, built, and natural environment of the District. The Official Plan also describes the measures and procedures for informing and obtaining the views of the public with respect to applications made under the Planning Act.

The District of Muskoka Official Plan (June 2025) designates the subject lands as follows:

- Schedule A – Land Use Designations: *'Urban Centre'* (Bala)
- Schedule B – Urban Service Areas: *'Full Service Area'* & within the *'Bala Urban Centre Boundary'*

The most directly applicable policy areas affecting the proposed development are reviewed below.

Section B	Guiding Principles: Response
MP&D Comment:	The proposed development has been evaluated in the context of the Guiding Principles of the District of Muskoka Official Plan and is consistent with the intent to manage and direct physical change in a manner that supports long-term environmental health, economic prosperity, and social well-being. The development is appropriately located within a settlement area where municipal services are available, thereby promoting efficient land use and minimizing impacts on the natural environment, including Muskoka's water resources. It contributes to a diverse and resilient local economy by supporting intensification that sustains local businesses and year-round activity, while also advancing sustainable growth patterns through the efficient use of existing infrastructure and supporting climate change mitigation and resiliency objectives. The proposed built form is designed to be compatible with the surrounding context, maintaining the existing small-town character while representing an appropriate form of development. In addition, the proposal supports the creation of a healthy community by providing additional housing opportunities in proximity to services and amenities, contributing to active lifestyles and overall well-being. It also assists in broadening the range of available and attainable housing options for various demographic groups, including families, seniors, and young people, and supports opportunities for residents to live and remain in the community. The subject lands are located in an area that supports a range of transportation options, including walkability and access to the existing road network, thereby reducing reliance on private vehicles. Overall, the proposed development is consistent with the Guiding Principles of the Official Plan and represents an appropriate and efficient form of development within the District of Muskoka.
Section C	Natural Heritage
Policy C1.1.a.	*It is an objective of this Plan that the diversity and connectivity of natural features in Muskoka, and the long-term ecological function and biodiversity of natural heritage systems be maintained, restored or, where possible, improved, recognizing linkages between and among natural*

heritage features and areas, surface water features and groundwater features.

MP&D Comment: The subject lands are currently cleared and contain no identified natural heritage features or environmental constraints. As such, the proposed development will not result in impacts to significant environmental features or functions.

The development has been designed with consideration for environmental sustainability, including avoiding impacts to bedrock and any potential subsurface water features through appropriate engineering and site design measures. Servicing and stormwater management will ensure no adverse impacts to surrounding lands.

Section C2 Water Resources

Policy C2.3 *Development and site alteration shall be restricted in or near sensitive surface water features and sensitive ground water features such that these features and their related hydrologic functions will be protected, improved or restored.*

Mitigative measures and/or alternative development approaches may be required in order to protect, improve or restore sensitive surface water features, sensitive ground water features, and their hydrologic functions.

Area Municipalities should identify sensitive surface water features and sensitive ground water features in their Official Plans.

In addition to requiring the protection of water quality for environmental reasons, protection is also required for recreational purposes as well.

It is recognized that policies that have a direct impact on protecting water resources are not limited to this Section, but rather are integrated throughout this Plan and include but are not limited to appropriate provision of water and wastewater servicing to support development and protection of natural heritage features and areas.

MP&D Comment: The proposed development conforms with the water resource policies of the Official Plan. The subject lands do not contain any identified sensitive surface water features or sensitive groundwater features, and no such features have been identified in proximity to the site.

Notwithstanding, the development has been designed to ensure that existing hydrologic functions are maintained. Appropriate servicing and stormwater management measures will be implemented to protect water quality and prevent adverse impacts to surrounding lands.

Policy C2.6.4.2 *Through the review of the Muskoka recreational water quality program, it has been determined that the overall health of lakes and rivers in Muskoka is very good to excellent and that the cautious approach to development taken in Muskoka has been beneficial. Consistent with the Guiding Principles of this Plan, the precautionary approach will be continued. In this regard, new lot creation, development or redevelopment will only be permitted where it is determined that impacts on water quality can be managed, mitigated or effectively eliminated and where resiliency of a waterbody to other environmental stressors is promoted in accordance with the policies of this Section.*

MP&D Comment: The proposed development is consistent with the precautionary approach to protecting water quality promoted in the Official Plan. The subject lands do not contain any water features, and no new lot creation is proposed. As such, the development will not result in impacts to lakes, rivers, or other waterbodies.

Furthermore, the design and servicing of the development will ensure that any potential effects on water quality are avoided, mitigated, or otherwise managed in accordance with the policies of the Plan. The proposal supports the continued protection and resiliency of Muskoka's water resources while allowing for appropriate and sustainable development.

Section C3 Climate Change

Policy C.3 *Muskoka's climate is changing. Muskoka is predicted to expect hotter, drier summers with more heat waves and more intense rainfall events, and warmer and milder winters. These changes will impact how the District of Muskoka and Area Municipalities plan for development and redevelopment, infrastructure and the public realm to ensure the area remains resilient to changing climate from economic, health, social, emergency services and environmental perspectives;*

The District of Muskoka shall work toward the implementation of a "climate change lens" as the approval authority on Planning Act applications and as a commenting agency to maximize resiliency of ecosystems and communities, manage the risks associated with climate

change and provide sustainable natural environmental services for future generations of residents and visitors to Muskoka. Considerations shall include but are not limited to:

i. *Reduction of greenhouse gas emissions;*
ii. *Improvement of air quality;*
iii. *Promotion of compact form;*
iv. *Efforts to limit the dispersal of the population and travel times between housing, employment, and amenities and services;*
v. *Use of green infrastructure;*
vi. *Promotion of design to: 1. Maximize energy efficiency and conservation including consideration of the mitigating effects of vegetation; and 2. Maximize opportunities for the use of renewable and alternative energy sources and systems;*
vii. *Identification and mitigation of existing hazards which may be compounded or aggravated by climate change, including flood prone areas and wildland fire areas; and*
viii. *Identification of natural heritage features that have become more sensitive to development pressures due to climate change.*

MP&D Comment: The proposed development is consistent with Muskoka's climate change policies. The site is cleared and avoids sensitive environmental features. At the detailed design stage, the development will incorporate sustainable measures, including energy-efficient building design, stormwater management, and opportunities for renewable energy. Its compact form supports reduced travel distances, helping to lower greenhouse gas emissions.

Section C4 Stormwater Management

Policy C.4.b/c. *In order to control flooding, ponding, erosion and sedimentation and to protect water quality and aquatic habitat or other natural habitat that depend on watercourses and other water bodies for their existence, stormwater management plans shall generally be required for any major development. Stormwater management shall be undertaken in accordance with Provincial, District of Muskoka or Area Municipal guidelines, strategies or plans.*

Except in extenuating circumstances proposals for development or redevelopment shall provide for a low impact development approach to stormwater management which may include techniques such as rainwater harvesting, phosphorus reduction, constructed wetlands, bioretention swales, green roofs, permeable surfaces, clean water

collection systems, and the preservation and enhancement of native vegetation cover.

MP&D Comment: The proposed development will implement stormwater management in accordance with Provincial and District of Muskoka guidelines to control flooding, erosion, and sedimentation while protecting water quality and aquatic habitat. A low-impact development approach will be incorporated at the detailed design stage, including measures such as rainwater harvesting, bioretention, permeable surfaces, and the preservation of native vegetation to manage runoff and support environmental sustainability.

Section D Sustainable Muskoka

Policy D.1 *It is the objective of this Plan to:*

- *Manage growth in a sustainable way that will make the most efficient use of land, infrastructure, public services and facilities;*
- *Provide the infrastructure and District-owned services necessary to support growth in a fiscally responsible manner;*
- *Strengthen the settlement structure of Muskoka as a composite of urban, rural and waterfront areas by focusing growth to Urban Centres and supporting appropriate development in Community Areas, and the Rural Area and Waterfront Area, which maintains the character and integrity of each of these areas;*
- *Focus year-round residential and employment growth in the Urban Centres where full services are available and to support the efficient use of land and infrastructure to meet the needs of present and future residents and employers;*
- *Encourage the further intensification and use of the lands within the Urban Centres and the efficient use of lands in designated growth areas, as appropriate;*
- *Ensure that an adequate supply of land and housing choices are available for present and future residents;*
- *Ensure that all District of Muskoka infrastructure, including sanitary sewage works, drinking water works, stormwater management facilities and roads meet the needs of present and future residents and employers in an efficient, environmentally-sensitive, cost effective and timely manner with consideration given to the long term maintenance, operational and financial consequences of the decision;*
- *Ensure that consideration is given to the economics of providing services to the people of Muskoka as part of the review of any development proposal to ensure that the development pattern is*

orderly, efficient and does not lead to inefficiencies or a decline in the level of municipal services;

- *Ensure that all urban development is appropriately phased and in conjunction with required infrastructure improvements where appropriate;*
- *Ensure that hard and soft service needs are identified early in the planning process and then appropriately prioritized and delivered either before or at the same time as new development;*
- *Encourage the establishment of an optimal balance between residential and non-residential uses, including the promotion of mixed uses on individual parcels of land and within settlement areas;*
- *Require the implementation of sustainable development practices and support resiliency and innovation in order to maximize resource and energy conservation and to recognize climate change impacts;*
- *Promote land use and development patterns that support the health and well-being of the people of Muskoka and contribute to a higher quality of life;*

MP&D Comment: The proposed development is consistent with the objectives of the District of Muskoka Official Plan related to growth, redevelopment, and urban intensification. The site is located within an Urban Centre, where full municipal services are available, allowing for the efficient use of land, infrastructure, and public services. By redeveloping a cleared site with a compact, four-storey residential building, the proposal contributes to the intensification of underutilized lands and supports orderly and sustainable growth within the Urban Centre.

The development provides new housing opportunities, contributing to an adequate and diverse supply of residential units for present and future residents, while supporting a mix of housing types appropriate to the community context. The proposed design aligns with efficient land use principles and ensures that required hard and soft services, including sanitary, water, stormwater, and transportation infrastructure, can be provided in a fiscally responsible and environmentally sensitive manner.

In addition, the proposal supports the broader settlement strategy by focusing growth in a serviced Urban Centre, maintaining the character of surrounding areas, and promoting compact, sustainable development patterns. Opportunities for energy efficiency, green infrastructure, and other sustainable design measures will be implemented at the detailed

design stage to support resiliency, resource conservation, and climate change adaptation.

Overall, the proposal aligns with the Official Plan objectives by promoting redevelopment, supporting the efficient use of land and infrastructure, providing new housing, and enhancing the health, sustainability, and livability of the Urban Centre.

Policy D.2 *Focus of Growth*

- *The settlement areas in Muskoka are the focus of year-round population and dwelling growth in the District and their vitality and regeneration shall be promoted. It is recognized that the vast majority of seasonal population and dwelling growth will occur outside of settlement areas as resource-based recreational uses primarily located in the Waterfront Area designation.*
- *There are two types of settlement areas in the Muskoka - Urban Centres where municipal sewage services and municipal water services are provided and Community Areas, where municipal sewage services and municipal water services are not provided.*
- *New development taking place in designated growth areas should occur adjacent to the existing built-up area and shall have a compact form, mix of uses and densities that allow for the efficient use of land, infrastructure and public service facilities.*

MP&D Comment: The proposed development is consistent with the Official Plan's focus on directing year-round population and dwelling growth to settlement areas. The subject lands are located within an Urban Centre, where full municipal water and sewage services are available, supporting the efficient use of existing infrastructure and public service facilities.

As a redevelopment of a cleared site within the built-up area, the proposal provides a compact, four-storey residential building that contributes to the vitality and regeneration of the Urban Centre. The design supports efficient land use and aligns with the Plan's objective to encourage intensification, a mix of uses, and appropriately scaled densities in designated growth areas, while maintaining compatibility with surrounding development.

Overall, the proposal reinforces the efficient, sustainable, and orderly growth of Muskoka's settlement areas and supports the long-term vitality of the Urban Centre.

Policy D.7 *It is a policy of this Plan that a target of 70% of new residential dwellings occupied on a year-round basis be directed to the Urban Centres in the six Area Municipalities as shown on Table 6.*

- *Muskoka Lakes: 70%*

MP&D Comment: The proposed development directly supports the Official Plan policy of directing year-round residential growth to Urban Centres. By providing 128 new residential units within a fully serviced Urban Centre, the proposal contributes to achieving the target of 70% of new dwellings being occupied year-round in Muskoka Lakes. This approach reinforces the Plan's objectives of promoting compact, serviced, and sustainable residential growth within settlement areas, supporting the vitality and long-term regeneration of the Urban Centre.

Policy D.12.a. *The minimum District-wide intensification target is 25% of new year-round residential development to be accommodated within the built-up area of Urban Centres. This target is intended to apply on aggregate across all Urban Centres in Muskoka, but not necessarily to each individual development proposal.*

MP&D Comment: The proposed development contributes to the District-wide intensification target by providing new year-round residential units within the built-up area of an Urban Centre. While the Official Plan notes that the 25% intensification target is applied on an aggregate basis across all Urban Centres, this redevelopment supports the efficient use of serviced lands and aligns with the broader objective of directing growth to existing settlement areas.

By utilizing a cleared site within the Urban Centre, the proposal demonstrates compact development that makes efficient use of land, infrastructure, and public services, supporting the Plan's overall intensification strategy.

Policy D.13 *In cases where major development is proposed in a designated growth area, it should be demonstrated that:*

i. The proposed development will generally serve as a logical extension to the existing built up area, is compact and has a mix of uses (if appropriate) to allow for the efficient use of land, infrastructure and public service facilities;

ii. The scale and location of the proposed development will be in conformity with Section D15 of this Plan, as applicable;

iii. *The proposal will contribute to the availability of a range of housing choices (e.g. density, form, and price) in the designated growth area as a whole, subject to servicing constraints;*

iv. *All of the other infrastructure and public service facilities required to service the development is available or to be provided, with such infrastructure and public service facilities being used as efficiently as possible; and*

v. *Access is provided in a manner that supports the provision of essential emergency services, active transportation, efficient transportation patterns, and/or linkages with adjacent existing or planned development, and will generally include more than one access point.*

MP&D Comment: The proposed development satisfies the criteria for major development within a designated growth area. The site represents a logical extension of the existing built-up area within the Urban Centre and has been designed as a compact, four-storey residential building that makes efficient use of land, infrastructure, and public services. While the proposal is primarily residential, it contributes to a broader mix of housing forms and densities within the growth area, helping to diversify housing choices for current and future residents.

The scale, location, and design of the development are consistent with Section D15 of the Official Plan, ensuring compatibility with surrounding land uses. Required infrastructure and public services, including municipal water, sanitary, stormwater, and transportation, are available or can be provided in an efficient and environmentally sensitive manner. Access to the site supports emergency services, active transportation, and efficient linkages with adjacent development, consistent with the objectives of the Plan.

Overall, the proposal represents a well-planned, serviced, and sustainable form of redevelopment that aligns with the Official Plan's policies for major development in designated growth areas.

Section D15 Servicing

Policy D.15.1 *Planning for sewage and water services shall:*

i) Direct and accommodate expected growth or development in a manner that promotes the efficient use and optimization of:

- *Existing municipal sewage services and municipal water services;*
- *Individual on-site water and sewer services where municipal sewage services and municipal water services are not available.*

ii) Ensure that these systems are provided in a manner that:

- *Can be sustained by the water resources upon which such services rely;*
- *Is feasible, financially viable and complies with all regulatory requirements;*
- *Protects human health and the natural environment and;*
- *Considers the impacts of climate change in the design of sewage and water infrastructure.*

iii) Promote water conservation and water use efficiency;
iv) Integrate servicing and land use considerations at all stages of the planning process;
v) Encourage development which optimizes the use of existing services before infrastructure is extended;

MP&D Comment: The proposed development is consistent with the Official Plan policies for sewage and water servicing. The site is located within a fully serviced Urban Centre and will utilize existing municipal water and sanitary services, thereby promoting the efficient use and optimization of existing infrastructure.

Servicing for the development will be designed in accordance with all applicable regulatory requirements and standards, ensuring the protection of human health and the natural environment. Detailed design at the Site Plan stage will address capacity, sustainability, and climate change considerations, including system resiliency and long-term performance.

The proposal supports water conservation and efficient use through modern design practices and integrates servicing considerations into the overall land use planning approach. By accommodating growth within an existing serviced area, the development avoids the need for service extensions and represents an efficient, logical, and sustainable form of development.

Policy D.15.2.b *Municipal sewage services and municipal water services are the preferred form of servicing for Urban Centres. Intensification and redevelopment within Urban Centres on existing municipal sewage services and municipal water services should be promoted, wherever feasible.*

MP&D Comment: The proposed development is consistent with the Official Plan's preference for municipal sewage and water services within Urban Centres. The site is located within a fully serviced area and will utilize existing municipal infrastructure. As a redevelopment within the built-up

area, the proposal represents an appropriate form of intensification that promotes the efficient use of existing municipal services, in accordance with the policies of the Plan.

Policy D.15.2.e

Special development projects that benefit the community and are in the public interest, such as social or affordable housing, community, education or medical facilities (e.g. hospital) which are proposed in the Future Service Area and require the extension of municipal sewage and/or water services may proceed without the need for an amendment to this Plan.

MP&D Comment:

The proposed development aligns with the intent of this policy, as it represents a form of residential development that contributes to the provision of additional housing within the community. While the subject lands are located within a serviced Urban Centre and do not require the extension of municipal services, the proposal supports broader public interest objectives by increasing the supply of housing and promoting efficient, compact development.

Accordingly, the development is consistent with the intent of the Official Plan to facilitate projects that provide community benefit and support sustainable growth.

Policy D.19

New development within all designations shall be encouraged to accommodate the implementation of leading-edge communication technologies, including those required to deliver broadband services, in order to attract and maintain investment, facilitate research and development and knowledge-based initiatives, and support health services.

Prior to approval of development, proponents of development or redevelopment, along with the District of Muskoka and Area Municipalities if appropriate, shall work with energy and/or communication providers early in the planning process to ensure that:

- *Adequate utility services and telecommunication networks are or will be established to serve the anticipated development;*
- *Utility services and telecommunication networks can be phased in as required; and,*
- *Utility services and telecommunication networks can be appropriately located, constructed, maintained, operated and installed in a manner that is cost effective, efficient, and minimizes disruption and environmental impact.*

MP&D Comment: The proposed development is consistent with the Official Plan policies supporting the integration of modern communication technologies and utility infrastructure. The development will be designed to accommodate appropriate telecommunications and broadband services, supporting connectivity, economic activity, and access to services.

Coordination with utility and communication providers will occur through the detailed design and approvals process to ensure that adequate services are available and can be efficiently and effectively integrated. Infrastructure will be planned and implemented in a manner that is cost-effective, minimizes disruption, and avoids adverse environmental impacts.

Overall, the proposal supports the provision of reliable and modern utility and communication networks in accordance with the intent of the Official Plan.

Section D20 Sustainable Development & Healthy Communities

Policy D.20.1 *It is the objective of this Plan to:*

- *Encourage land use and development patterns that support the health and well-being of the people of Muskoka and contribute to a higher quality of life;*
- *Promote the development of complete, sustainable and healthy communities that create and improve physical and social environments and expand community resources which enable people to mutually support each other in performing all the functions of life and in developing to their maximum potential, including:*

i. Providing choices and opportunities for all residents of all ages, by providing a diverse range of housing types, transportation modes, employment options, and recreation or leisure activities, including opportunities for local food production;

ii. Managing growth and economic development in a manner that will allow for desirable growth and change that respects the small-town, rural and waterfront character of Muskoka;

iii. Efficiently managing the natural and social resources of the community to achieve the optimal benefits for all residents of all ages;

MP&D Comment: The proposed development is consistent with the objectives of the Official Plan by promoting a healthy, complete, and sustainable community. The development introduces a range of housing options,

including attainable rental units and accessible units, providing opportunities for residents of varying ages, abilities, and income levels.

The proposal represents an efficient use of a previously developed site within the Settlement Area of Bala, supporting compact growth while utilizing existing municipal infrastructure and services. The inclusion of the Legion space at grade maintains and enhances an important community facility, supporting social interaction and community well-being.

The development has been designed to be compatible with the surrounding neighbourhood and reflects the small-town character of Bala, while contributing to appropriate and desirable growth. Overall, the proposal supports the efficient use of land and community resources, contributing to an improved quality of life for residents and aligning with the long-term objectives of the Official Plan.

Policy D.22

Accessibility:

- *Accessibility shall be improved for all people but particularly persons with disabilities and seniors by removing or preventing land use barriers that restrict full participation in society.*
- *In reviewing applications under the Planning Act, the District of Muskoka will have regard for accessibility to all facilities, services and matters to which these Acts apply and will identify, prevent, and/or remove land use barriers which may restrict full participation in society for persons with disabilities and seniors.*
- *Area Municipal Official Plans shall include accessibility policies in accordance with any applicable legislation.*
- *Area Municipalities shall consider improved accessibility in the review of development applications.*

MP&D Comment:

The proposed development supports the intent of the Community Hub policies through the inclusion of a new Legion space at grade, which will function as a local gathering place and enhance community services within Bala. The space will support social, cultural, and community activities, contributing to increased service capacity and a strengthened sense of community.

The development also addresses accessibility objectives by incorporating barrier-free common areas and approximately 20% accessible residential units. These features help remove land use barriers and ensure that the site is accessible to persons of all ages and abilities, including seniors and individuals with disabilities. Overall, the proposal supports integrated

community services and inclusive design, consistent with the intent of the policies.

Section E Housing

Policy E1 *It is the objective of this Plan to meet current and future housing needs by:*

a) *Maintaining at all times in conjunction with the Area Municipalities, the ability to accommodate residential growth for a minimum of 10 years through residential intensification and redevelopment and, if necessary, lands which are designated and available for residential development to meet projected requirements of current and future residents, in consideration of the projections and in accordance with the applicable targets contained in this Plan;*
b) *Maintaining at all times in conjunction with the Area Municipalities land with servicing capacity sufficient to provide at least a three-year supply of residential units available through lands suitably zoned to facilitate residential intensification and redevelopment, and land in draft approved and registered plans/descriptions in consideration of the projections and in accordance with the applicable targets contained within this Plan;*
c) *Encouraging the provision of a wide array of housing opportunities, including housing that is attainable to a full range of income and demographic groups in Muskoka;*
d) *Assisting in the achievement of residential intensification and attainable housing by encouraging opportunities for mixed-use development in appropriate locations;*
e) *Permitting the development of secondary residential dwelling units in appropriate locations;*
f) *Encouraging the use of surplus public lands for attainable and affordable housing only if the site is appropriate for such a use and located where the use would be compatible with adjacent uses;*
g) *Encouraging the development of seniors housing, including residential and institutional retirement homes;*
h) *Encouraging the provision of alternative forms of housing for special needs groups including housing for persons with disabilities such as physical, sensory or mental health disabilities, and housing for older persons and transitional housing;*
i) *Supporting universal physical access and encouraging the building industry to incorporate such features in new residential structures; and,*
j) *Encouraging the redevelopment of brownfield sites.*

MP&D Comment: The proposed development supports the objectives of the Plan by contributing to the supply of residential units through intensification and redevelopment of a previously developed site within the Settlement Area of Bala. The project utilizes existing municipal servicing, supporting the maintenance of both short-term and long-term residential land supply.

The development provides a range of housing options, including attainable rental units (target of 33% of units) and a mix of one- and two-bedroom layouts, addressing the needs of a broad range of income levels and demographic groups, including seniors and smaller households.

The proposal also supports accessible and inclusive housing, incorporating barrier-free common areas and accessible units, consistent with objectives to improve universal access and accommodate persons with disabilities. Overall, the development promotes residential intensification, housing diversity, and efficient use of serviced lands, contributing to the achievement of current and future housing needs in Muskoka.

Policy E3.a-d

Growth Area Density Targets

- *In order to encourage the efficient use of land and infrastructure and to support environmentally and fiscally sustainable communities that are economically vibrant, liveable, healthy and safe, the minimum average density target for new development in designated growth areas in the Urban Centres shall be 17 units per net hectare (i.e. per hectare of developable land, excluding natural heritage features and areas, hazardous lands, and infrastructure such as roads, stormwater management ponds, etc.).*
- *The target in sub-section a) above applies primarily to lands that are not within an existing draft approved or registered plan of subdivision/condominium description. However, as draft approved plans/descriptions are reviewed for possible extension, increases in the average density will be encouraged in an effort to achieve the target.*
- *In order to achieve the above density target, the target housing mix as per Section E4 of the Plan shall support the development of a range of housing types.*
- *It is recognized that achieving this density target on a site-specific basis may be difficult given terrain or environmental constraints, and as a consequence, this policy is intended to be a target to be achieved wherever possible within individual site-specific development proposals and applied on aggregate across all*

designated growth areas in each Area Municipality. This average density target would provide for the development of lots that have an average frontage of approximately 15 metres.

MP&D Comment:

The proposed development supports the intent of the Plan by delivering a compact and efficient form of residential development within a designated Settlement Area. The subject property comprises approximately 0.77 hectares, and with a total of 128 residential units, the proposal achieves a density of approximately 166 units per net hectare, significantly exceeding the minimum average density target of 17 units per net hectare.

It is noted that the minimum density target of 17 units per hectare is reflective of historical, lower-density housing forms, which do not adequately support the delivery of attainable and diverse housing options in today's context. In contrast, the proposed development responds to current housing needs by introducing a higher-density built form that enables a broader range of unit types and more attainable rental opportunities.

The development represents an efficient use of serviced land and existing infrastructure, supporting a sustainable, liveable, and economically vibrant community. In addition, the proposed mix of unit types, including one- and two-bedroom units and attainable housing options, aligns with the Plan's objective of providing a range of housing forms to meet diverse community needs.

While density targets are intended to be achieved on an aggregate basis, the proposal demonstrates that the subject lands are well-suited to accommodate higher density development, without constraints related to natural heritage features or hazardous lands. As such, the development makes a meaningful contribution toward achieving the overall density and housing objectives for designated growth areas within the Township.

Policy E4

Targeted Housing Mix In Designated Growth Areas

- *The housing mix targets for new residential development in the designated growth area of each of the Urban Centres is outlined on Table 10 and in accordance with the District of Muskoka Growth Strategy.*
- *To achieve the targets set out in Table 10, major residential development proposals on aggregate in the designated growth area should include a mix and range of lot sizes and*

dwelling types to achieve the mix of densities as set out in the Area Municipal Official Plans.

- *The targets set out in Table 10 are intended to apply on an aggregate basis across all designated growth areas in each Area Municipality and not necessarily to each individual site-specific development proposal.*
- *The targets in Table 10 apply primarily to lands that are outside of an existing draft approved or registered plan of subdivision/condominium description. However, as draft approved plans/descriptions are reviewed for possible extension, diversifying the housing mix will be encouraged in an effort to achieve the targets.*

MP&D Comment:

The proposed development has been reviewed in the context of the Targeted Housing Mix for Designated Growth Areas (Section E4) of the District of Muskoka Official Plan. For the Township of Muskoka Lakes, the Plan identifies a target housing mix of approximately 80% low-density, 15% medium-density, and 5% high-density housing within designated growth areas, intended to guide the overall distribution of housing types across the municipality.

It is noted that these targets are intended to be applied on an aggregate municipal-wide basis, rather than on a strict site-specific basis. In this context, the subject proposal contributes directly to the diversification of the housing stock within Muskoka Lakes by introducing a higher-density residential form (128-unit apartment building) on a fully serviced, previously developed site within the Settlement Area of Bala.

While the proposed development exceeds the proportion of high-density housing contemplated in Table 10 on a site-specific basis, it is consistent with the policy direction that encourages a range of housing types across the municipality as a whole, including opportunities for intensification and redevelopment. The proposal also advances key planning objectives by providing attainable rental housing, accessible units, and a mix of unit types, helping to address local housing needs and improving housing choice within the community.

Accordingly, the development supports the intent of Section E4 by contributing to a broader, more balanced and responsive housing supply in Muskoka Lakes, particularly through the

delivery of needed higher-density and rental housing within an appropriate Settlement Area location.

Policy E7 *Attainable Housing*

- *As part of ensuring attainable housing is available, the District supports the provision of housing which is affordable to low and moderate-income households. In this regard, the overall District target is 25% of new residential dwelling units to be attainable as defined in this Plan. This target is intended to apply on aggregate across the District, but not necessarily to each individual site-specific development proposal. Though attainable housing is encouraged in all land use designations, Urban Centres and Community Areas provide the most appropriate locations to meet the criteria of attainability listed above.*
- *In determining the appropriate target, each Area Municipality shall also address the phasing of the provision of attainable housing in larger developments and the minimum threshold of development that triggers the need for affordable housing.*
- *To support the long-term achievement of the targets and to acknowledge the role of the private sector in the provision of attainable housing, the District of Muskoka will continue to offer financial and other incentives such as the Muskoka Affordable Housing Initiatives Program in collaboration with Area Municipalities, Provincial, non-profit organizations and other partners as applicable. Some of these incentives may require agreements or other mechanisms to guarantee the long-term affordability of housing. The Area Municipalities are encouraged to investigate complementary financial incentives in order to in order to facilitate the provision of affordable/attainable housing.*
- *Where a development proposal contains affordable or attainable housing units and is subject to an application where the District of Muskoka is the approval authority, any request for changes to standard processes, policies or procedures, including the reduction of fees or charges, should be made at the time of a complete application for consideration by Muskoka District Council. Demonstration of or mechanisms to guarantee long-term affordability may be required.*
- *The processing of development applications that meet the criteria outlined in Section E7 a) of this Plan will be facilitated and expedited to the extent possible, while ensuring that the public interest is protected in accordance with policies of this Plan.*

MP&D Comment: The proposed development supports the District's objectives for attainable housing by providing approximately 33% of the total residential units as attainable rental housing, exceeding the District-wide target of 25% applied on an aggregate basis. The inclusion of attainable housing within the development contributes to expanding housing options for low- and moderate-income households within the community of Bala and the broader Township of Muskoka Lakes.

The project is located within a designated Settlement Area (Urban Centre context), which the District identifies as the most appropriate location for the delivery of attainable housing due to access to infrastructure, services, and community facilities. As such, the proposal represents an appropriate and strategic opportunity to advance the District's housing objectives within a serviced and sustainable growth area.

The development also supports the intent of the policy by contributing to the timely delivery of attainable housing units as part of a larger residential redevelopment, recognizing the role of the private sector in delivering housing supply. The attainable units will be integrated within the overall building form, supporting a complete and inclusive residential community rather than segregated housing types.

Inclusive, the proposal advances the District's attainable housing objectives by providing a meaningful contribution to housing affordability and diversity, while aligning with municipal and provincial direction to prioritize housing within Settlement Areas and support efficient, market-responsive delivery of attainable units.

Section G4 Heritage Resources

Policy G.4.1 *The District of Muskoka recognizes that there are archaeological resources of pre-contact and early historic habitation as well as areas of archaeological potential within the District that may be adversely affected by future development.*

Development and site alteration shall not be permitted on lands containing archaeological resources unless significant archaeological resources have been conserved.

MP&D Comment: The subject lands are not known to contain archaeological resources, nor are they located within or adjacent to areas identified as having elevated archaeological potential that would warrant further investigation at this time. In consideration of the District of Muskoka's archaeological policies,

it is our view that the proposed development and site alteration may proceed without the requirement for an archaeological assessment. Should any archaeological resources be encountered during construction, appropriate protocols will be followed in accordance with applicable Provincial requirements. This approach is consistent with ensuring responsible development while avoiding unnecessary study where no known or identified archaeological constraints exist.

Section J Settlement Pattern

Policy J.1.1 *It is the objective of this Plan to:*

a) *Focus the majority of expected year-round population and employment growth in the Urban Centres where full services are available;*
b) *Support the efficient use of land and infrastructure in Urban Centres to meet the needs of present and future residents and businesses;*
c) *Ensure that an adequate supply of land and housing choices are available in the Urban Centres for present and future residents of all ages, abilities, incomes and household sizes;*
d) *Promote the efficient use of existing and planned infrastructure and public service facilities by supporting opportunities for various forms of intensification, where appropriate; and,*
e) *Encourage increases in density in designated growth areas as defined in this Plan to minimize the amount of land required for new development;*
f) *Promote a variety of complementary and compatible land uses including attainable/affordable housing, special needs and transitional housing, community facilities, schools, small-scale commercial uses and recreational open space areas;*
g) *Encourage Area Municipalities to establish comprehensive policies, which may include design guidelines, to foster development patterns that are safe, healthy, functional and attractive; and,*
h) *Encourage the establishment and maintenance of a system of public open spaces, parkland, and recreational facilities that meets the needs of present and future residents.*

MP&D Comment: The subject lands are located within the Bala Urban Centre, as identified on Schedule A – Land Use Designations, and within a Full Service Area and the Bala Urban Centre Boundary as shown on Schedule B – Urban Service Areas.

Accordingly, the proposed development is appropriately situated within a designated Urban Centre where full municipal services are available and where the majority of growth is directed. The proposal is consistent with the intent of the Plan to focus development within Urban Centres, promote the efficient use of existing infrastructure, and support a range of housing opportunities, including attainable housing on an aggregate basis.

The development represents a form of appropriate intensification within a designated growth area, contributing to the efficient use of land and municipal servicing while supporting the long-term vitality and function of the Bala Urban Centre.

No amendments are required at the District level; however, consultation and review of the Official Plan Amendment (OPA) application will be undertaken through the Township in accordance with their standard planning review process and applicable requirements.

It is the opinion of the undersigned that the development and associated applications, are consistent with the policy direction provided by the District of Muskoka Official Plan.

10.4 TOWNSHIP OF MUSKOKA LAKES OFFICIAL PLAN

The purpose of the Official Plan is to establish the goals and objectives for development in the Township, and to set out policies for achieving them. The Official Plan establishes the framework within which sustainable growth and community improvement can take place.

The Township of Muskoka Lakes Official Plan (2023) designates the subject lands as follows:

- Schedule A – Land Use: '*Urban Centres and Community Areas'*
    - *Bala Urban Centre*

- Schedule B2 – Bala Land Use: *'Institutional'*
    - *'Bala Settlement Area'*

As noted, an Official Plan Amendment (OPA) is proposed to redesignate the subject lands to *'Urban Residential'* to reflect and support the intended development vision.

The most directly applicable policy areas affecting the proposed development are reviewed below.

Section B	Objectives
Policy B2	• *Direct most forms of year-round residential development to the Urban Centres where full services are available, and to support the efficient use of land and infrastructure to meet the needs of present and future residents and businesses;* • *Protect and enhance the character of the Urban Centres and Community Areas and to maintain them as sustainable, diverse, livable, safe, healthy, thriving and attractive communities;* • *Recognize existing Core Areas in the Urban Centres as mixed-use, vibrant, and accessible places for living, entertainment, leisure, commerce and civic activities, and to support their intensification and revitalization;* • *Promote the preservation and appropriate reuse of historic resources, and celebrate and assist in the retention of Township's heritage, and the reinforcement of cultural identity;*
MP&D Comment:	The proposed development is consistent with the applicable policy objectives. The subject lands are located within the Bala Urban Centre and a Full Service Area, and the proposal supports the direct focus of year-round residential development within serviced Urban Centres where infrastructure capacity exists. The redevelopment maintains and enhances the existing character of the Urban Centre through the continued use and preservation of the existing Legion building, which represents an established and longstanding community use. This approach respects the historical land use of the site and supports the retention of cultural and community identity within Bala. The proposal also supports efficient use of land and infrastructure and contributes to the ongoing vitality of the Urban Centre as a mixed-use, livable, and sustainable community.
Policy B3.b	*Promote the development of sustainable and healthy communities that create and improve physical and social environments and expand community resources which enable people to mutually support each other in performing all the functions of life and in developing to their maximum potential, including:* • *Providing choices and opportunities for all residents of all ages, by providing a diverse range of housing types, transportation modes, employment options, and*

recreation or leisure activities, including opportunities for local food production; and

- *Efficiently managing the natural and social resources of the community to achieve the optimal benefits for all residents of all ages;*

MP&D Comment: The proposed development is consistent with the objective of promoting sustainable and healthy communities. Located within the Bala Urban Centre and a Full Service Area, the proposal supports efficient use of existing land and infrastructure while contributing to a compact, serviced form of development.

The redevelopment maintains an established community use and supports additional housing opportunity within the Urban Centre, contributing to a diversity of housing options and improved community resilience. The location also provides access to existing services, amenities, and transportation options.

Overall, the proposal supports the efficient management of community resources and the continued development of a complete, livable, and sustainable community.

Policy B.4 *Housing Objectives:*

a) Ensuring that an adequate supply of land and housing choices are available for present and future residents of all ages, abilities, incomes and household sizes, and is located in areas near jobs, and essential goods and services;

b) Maintaining at all times the ability to accommodate residential growth for a minimum of 15 years through residential intensification and redevelopment within the Urban Centres and, if necessary, lands which are designated and available for residential development to meet projected requirements of current and future residents, in consideration of the projections and in accordance with the applicable targets contained in this Plan;

c) Maintaining at all times land in conjunction with servicing capacity sufficient to provide at least a three-year supply of residential units available through lands suitably zoned to facilitate residential intensification and redevelopment, and land in draft approved and registered plans/descriptions in consideration of the projections and in accordance with the applicable targets contained within this Plan;

d) *Assisting in the achievement of residential intensification and attainable housing by encouraging opportunities for mixed-use development in appropriate locations;*
e) *Permitting the development of additional dwelling units (which are accessory to a primary dwelling unit on the same property) throughout the Township except in the Waterfront Area designation outside of the Urban Centres and where residential uses are otherwise prohibited by this Plan;*
f) *Encouraging the use of surplus public lands for attainable housing;*
g) *Encouraging the development of seniors housing, including residential and institutional retirement homes;*
h) *Recognizing the need for housing for seasonal employees involved in the tourism and construction industries in particular and in other industries as required; and,*
i) *Encouraging the provision of alternative forms of housing for special needs groups and housing for older persons and transitional housing.*

MP&D Comment:

The subject lands are located within the Bala Urban Centre and a Full Service Area, where residential growth is directed and where a full range of housing forms and densities is encouraged. The proposal contributes to maintaining an adequate supply of housing within a serviced Urban Centre, supporting long-term residential capacity through appropriate intensification and redevelopment.

The development supports housing diversity by introducing additional residential opportunities within an established community setting, contributing to the range of housing types available to meet the needs of different household sizes, incomes, and life stages. The proposal also supports the efficient use of existing infrastructure and proximity to employment areas, services, and amenities.

In addition, the proposal assists in achieving attainable housing objectives on an aggregate basis by enabling additional residential units within a serviced and centrally located Urban Centre. While not specifically targeted as seniors, seasonal, or special needs housing, the development contributes to a broader housing supply that supports affordability and choice.

Overall, the proposal aligns with the intent of the Housing Objectives by supporting residential intensification, efficient use of serviced land, and the provision of housing opportunities within a designated Urban Centre that is well-positioned to accommodate future growth.

Policy B.7

Climate Change:

- *Requires that most of the new residential dwellings occupied on a year-round basis be directed to Port Carling and Bala where municipal services are present;*
- *Encourages additional intensification in the Urban Centres to maximize the use of land and infrastructure and limit the outward expansion of Urban Centres;*
- *Promotes compact built form within Urban Centres and efforts to limit the dispersal of new development and travel times between housing, employment, and amenities and services;*
- *Promotes development of and use of green infrastructure and low-impact development;*
- *Requires development in Urban Centres to be phased to ensure that the required infrastructure is developed in lock-step with development;*

MP&D Comment:

The subject lands are located within the Bala Urban Centre and a Full Service Area, aligning with the direction to concentrate year-round residential development in serviced Urban Centres where municipal infrastructure is available. The proposal supports intensification within a designated Settlement Area, reducing pressure for outward expansion and promoting more efficient use of land and infrastructure.

The development also contributes to a more compact built form and supports reduced travel distances between housing, services, and amenities within the Urban Centre, thereby helping to limit transportation-related emissions. In doing so, it supports a more efficient and sustainable development pattern.

The proposal will be implemented in coordination with the Township and relevant service providers to ensure that any required infrastructure is appropriately aligned with development, consistent with the intent of phased and planned growth.

Section C	Growth Management
Policy C.1	*Objectives:* • *Reinforce the role of Port Carling and Bala as the two Urban Centres and the primary commercial centres in the Township;* • *Manage growth in a sustainable way that will make the most efficient use of land, infrastructure and public services facilities;* • *Strengthen the settlement structure of the Township as a composite of urban, rural and waterfront areas by focusing growth to Urban Centres and supporting appropriate development in the Community, Rural and Waterfront Areas, which maintains the character and integrity of each of these areas;* • *Focus year-round residential development in the Urban Centres where full services are available and to support the efficient use of land and infrastructure to meet the needs of present and future residents and employers;* • *Encourage the further intensification and use of the lands within the Urban Centres and the efficient use of lands in designated growth areas, as appropriate;* • *Ensure that an adequate supply of land and housing choices are available for present and future residents;* • *Ensure that all infrastructure, including stormwater management facilities and roads meet the needs of present and future residents and employers in an efficient, environmentally-sensitive, cost effective and timely manner with consideration given to the long term maintenance, operational and financial consequences of the decision;* • *Encourage the establishment of an optimal balance between residential and non-residential uses, including the promotion of mixed uses on individual parcels of land and within Urban Centres.*
MP&D Comment:	The subject lands are located within the Bala Urban Centre, one of the Township's two primary Urban Centres, and are appropriately situated to support the concentration of year-round residential development in a fully serviced area. The proposal reinforces the settlement structure by directing growth to a designated Urban Centre and away from rural and waterfront

areas, thereby maintaining the character and integrity of those areas.

The development represents efficient use of existing land and infrastructure through appropriate intensification within the Urban Centre, supporting the long-term efficiency of municipal servicing, roads, and public service facilities. It contributes to a more sustainable pattern of growth by making effective use of already planned and available infrastructure.

The proposal also supports an adequate supply of housing by enabling additional residential opportunities within a designated growth area. It encourages a more balanced and functional Urban Centre by contributing to residential growth in proximity to existing services, amenities, and employment opportunities.

The development is compatible with the intent of promoting compact, planned growth and supports the efficient and cost-effective provision of infrastructure and public services in a manner that is environmentally and fiscally responsible.

Policy C.2.a *Focus of Growth:*

- *It is a policy of this Plan that a target of 70% of new dwellings occupied on a year-round basis be directed to the Urban Centres of Port Carling and Bala and that the vitality and regeneration of each Urban Centre be promoted. The limits of the two Urban Centres are shown on Schedules A, B1 and B2.*
- *A target of 25% of new year-round residential development is to be accommodated as intensification within the built-up area of the two Urban Centres in the Township.*

MP&D Comment: The subject lands are located within the Bala Urban Centre, which is one of the two primary Urban Centres intended to accommodate the majority of new year-round residential growth. The proposal supports the policy direction that 70% of new year-round dwellings be directed to Port Carling and Bala by contributing additional residential development within a fully serviced Urban Centre.

The development also supports the target that 25% of new year-round residential development be accommodated through intensification within the built-up areas of the Urban Centres. The proposal represents an efficient use of existing land and infrastructure within the established

Bala Urban Centre, thereby contributing to the achievement of this intensification target.

Section D2 Water Resources

Policy D.2.1 & D.2.2 & D.2.3

- *It is the intent of this Plan to recognize the importance of the ecological function of all watercourses and surface water features, and their associated flood plains, valleys and stream corridors. Watercourses and surface water features are generally shown on the Schedules and appendices to this Plan.*
- *The Township encourages the protection and regeneration of natural areas near watercourses and surface water features and the protection of headwater areas for maintaining natural hydrological processes within a watershed and maintaining resilience to climate change.*
- *In addition to requiring the protection of water quality for environmental reasons, protection is also required for recreational purposes and as a source of drinking water.*
- *Identifying water resource systems consisting of ground water features, hydrologic functions, natural heritage features and areas, and surface water features including shoreline areas, which are necessary for the ecological and hydrological integrity of the watershed;*
- *Ensuring stormwater management practices minimize stormwater volumes and contaminant loads, and maintain or increase the extent of vegetative and pervious surfaces for both new development and redevelopment;*
- *Development and site alteration shall be restricted in or near sensitive surface water features and sensitive ground water features such that these features and their related hydrologic functions will be protected, improved or restored.*
- *All development decisions within Muskoka Lakes shall promote water conservation and support the efficient use of water resources on a watershed and subwatershed basis.*

MP&D Comment: The subject lands are located within the Bala Urban Centre and represent a redevelopment of an existing developed site. No sensitive watercourses, surface water features, or headwater areas are located on or immediately adjacent to the subject lands, and no encroachment into regulated floodplains, valleylands, or stream corridors is proposed.

The development will be subject to appropriate stormwater management practices through the Township and applicable agencies, designed to

ensure that stormwater volumes and water quality impacts are appropriately managed in accordance with current standards. The proposal will maintain or improve existing site conditions where feasible, including opportunities to support infiltration and minimize runoff through appropriate site design.

The redevelopment will not result in negative impacts to water quality or hydrologic function and will be undertaken in a manner that supports responsible water resource management. Water conservation measures will be implemented through standard servicing and building practices associated with new residential development.

The proposal therefore maintains consistency with the intent of protecting water resources, supporting watershed integrity, and ensuring environmentally responsible development within the Urban Centre.

Policy D.2.5.1.d *In order to control flooding, ponding, erosion and sedimentation and to protect water quality and aquatic habitat or other natural habitat that depend on watercourses and other water bodies for their existence, stormwater management plans shall be required for any major development or at the discretion of the Township for any development proposal.*

MP&D Comment: A stormwater management plan will be prepared for the proposed development in accordance with Township requirements and applicable standards. The plan will address flooding, ponding, erosion, and sedimentation, and will ensure that post-development runoff is appropriately controlled to protect water quality and downstream receiving systems.

The stormwater management approach will be reviewed and approved through the Township and applicable agencies as part of the development approvals process.

Policy D.2.5.2 *Proposals for development or redevelopment should be designed based on a treatment train approach that addresses requirements for water quality, erosion control, flood control, thermal mitigation and water budget. Low Impact Development Best Management Practices such as bioswales/biofilters with underdrains, infiltration trenches, rain gardens and perforated pipes shall be encouraged in addition to wet end of pipe facilities to conserve water use and to manage stormwater on-site.*

MP&D Comment: Stormwater management for the proposed development will be designed using a treatment train approach that addresses water quality, erosion control, and quantity management, consistent with Township requirements. Low Impact Development (LID) measures will be incorporated where feasible, such as bioswales, infiltration features, and permeable systems, in combination with conventional stormwater controls as required. The objective will be to manage stormwater on-site, reduce runoff volumes, and support water quality protection.

Section I Urban Centre

Policy I.2.3.2.h *Private Realm: Site & Building Design*
-New mid-rise residential development that has a maximum height of 4 storeys and 14 metres may be permitted provided it:

i. Is compatible with adjacent residential neighbourhoods;
ii. Will not cause traffic hazards or an unacceptable level of congestion on surrounding roads;
iii. Is located in proximity to public service facilities, such as parks, schools and open spaces;
iv. Is located on a site that has adequate land area to incorporate the building, onsite parking, an outdoor amenity area, and appropriate buffering such as setbacks, landscaping and fencing to ensure the compatibility of the use with adjacent properties;
v. Takes advantage, where appropriate, of the topography and natural vegetation of the site and area in minimizing the impacts of mid-rise buildings on adjacent land uses; and,
vi. Is demonstrated that the potential shadow impacts associated with mid-rise buildings will be at an acceptable level on adjacent properties.

MP&D Comment: The proposed building is designed as a mid-rise form not exceeding four (4) storeys, with the overall building height varying across the site in response to existing topography and grade changes. While the development complies with the permitted four-storey height framework, the measured building height exceeds the numerical height limit in certain areas due to these grade differentials. Notwithstanding, the building has been carefully designed to mitigate visual and massing impacts through appropriate orientation, siting, and architectural treatment. The use of step-backs, material variation, and façade articulation helps to reduce the perceived scale of the building and ensures a more compatible transition to surrounding land uses.

The subject lands are located within a mixed-use and evolving community context, where a range of built forms and uses already exist. In this regard, the proposed development represents an appropriate and context-sensitive form of intensification that has been designed to integrate with the surrounding neighbourhood, while making efficient use of the site and available infrastructure.

The development is accessed via Maple Avenue with a defined internal circulation system and on-site parking, which is sufficient to support the proposed use and is not anticipated to result in traffic hazards or unacceptable congestion .

The site is centrally located within the Bala Urban Centre and is in proximity to existing community services, commercial uses, and open space amenities, supporting walkability and access to public service facilities.

The site layout accommodates the building footprint, parking, loading, and circulation, as well as outdoor amenity areas, with appropriate setbacks and landscaping opportunities to ensure compatibility with adjacent uses. The design also incorporates separation between the residential and Legion functions, maintaining functionality and buffering. The building design responds to site conditions, including changes in elevation, by incorporating a partially elevated structure which reduces visual massing and integrates the building with the surrounding topography.

Given the modest height and context within the Urban Centre, shadow impacts are anticipated to be limited and acceptable, with no significant adverse impacts on adjacent properties expected.

Policy I.2.3.3

For the purposes of this Plan, designated growth areas are undeveloped areas located outside of the built up areas, but which have not been fully developed. In cases where major development is proposed in a designated growth area, it should be demonstrated that:

a) *The proposed development will serve as a logical extension to the existing built up area, is compact and has a mix of uses (if appropriate) to allow for the efficient use of land, infrastructure and public service facilities;*
b) *Opportunities for infilling and intensification within the existing urban serviced boundaries have been considered, through an update to the Township's implementing Zoning By-law or in a*

Community Planning Permit By-law, which shall identify opportunities for intensification;

c) *The proposal will contribute to the availability of a range of housing choices (e.g., density, form, and price) in the designated growth area as a whole, subject to servicing constraints;*
d) *All of the other infrastructure and public service facilities required to service the development is available or to be provided, with such infrastructure and public service facilities being used as efficiently as possible; and*
e) *Access is provided in a manner that supports the provision of essential emergency services, active transportation, efficient transportation patterns, and/or linkages with adjacent existing or planned development, and shall generally include more than one access point.*

MP&D Comment: The subject lands are located within the existing built-up area of the Bala Urban Centre and do not constitute a designated growth area as defined by the Plan. The proposal represents redevelopment and intensification of an existing site within a fully serviced Urban Centre, rather than development on undeveloped lands outside the built-up area.

Accordingly, the criteria related to designated growth areas do not apply in this instance. Notwithstanding, the proposal is consistent with the broader intent of the Plan by supporting compact development, efficient use of land and infrastructure, and contributing to the range of housing options within the Bala Urban Centre.

Policy I.3.1 *Long Term Vision for Bala*

- *Infilling within the existing community shall be required to fully utilize serviced land areas. Residential conversions and smaller lot infilling shall be allowed provided adequate servicing can be provided.*
- *Private and public development and redevelopment activities should enhance pedestrian access throughout Bala. An integrated walkway system throughout the core area of Bala should be developed, linking the waterfront areas with the parks and open space system as well as the core commercial area.*
- ***Medium density residential development is permitted and encouraged in Bala.***

MP&D Comment: The proposed development is consistent with the Long Term Vision for Bala. The proposal represents infill and redevelopment within the existing built-up area, making efficient use of fully serviced lands within the Bala

Urban Centre. Adequate servicing is available to support the development.

The site design includes defined pedestrian access points and connections to the surrounding area, supporting walkability and contributing to the broader objective of enhancing pedestrian movement within Bala and linking to nearby amenities and the commercial core. The development also aligns with the direction to encourage medium density residential uses, providing a form of housing that contributes to intensification while remaining compatible with the Urban Centre context.

Section I.4 Urban Residential Land Use Designation

Policy I.4.1.1 ***The following uses are permitted on lands designated Urban Residential as shown on Schedules B1 and B2:***

- ***All forms of residential dwellings (low density, medium density and high density),*** *including additional residential units and rooming houses;*
- *Long term care facilities and retirement homes;*
- *Recreational and/or cultural facilities;*
- *Places of worship and other institutional uses;*
- *Public service facilities;*

*MP&D Comment: An Official Plan Amendment is required to redesignate the subject lands from Institutional to Urban Residential.

The proposed Urban Residential designation is appropriate given the site's location within the Bala Urban Centre and a Full Service Area, where residential intensification is encouraged. The proposal contemplates a mix of residential units in a medium density built form, which is consistent with the range of permitted uses within the Urban Residential designation. In addition, the development maintains the existing Legion use on-site, which continues to function as a cultural and community facility. This component aligns with the permitted recreational and cultural uses within the Urban Residential designation and ensures continuity of an established community use.

The proposed redesignation therefore facilitates appropriate residential intensification while maintaining a complementary community use, representing a logical and compatible transition from the existing Institutional designation.

Section I.4 Urban Residential – High Density

Policy I.4.1.2.3 (a-c) *Where high density development is proposed in the Urban Residential designation, the following policies apply:*

a) ***High density residential development generally consists of low profile walk-up apartments or condominiums, or similar kinds of multiple dwelling units.***
b) *The implementing Zoning By-law or Community Planning Permit By-law shall establish lot area and lot frontage requirements.*
c) *High density residential development shall only be permitted on full municipal services.*

MP&D Comment: The proposed development is consistent with the policies for high density residential development within the Urban Residential designation.

The development consists of a low-rise apartment building form, which aligns with the intent of permitting low profile multiple dwelling units such as apartments or condominiums. The scale and built form are appropriate for the Bala Urban Centre context. Detailed performance standards, including lot area and frontage requirements, will be addressed through the implementing Zoning By-law.

The subject lands are located within a Full Service Area in the Bala Urban Centre and are serviced by municipal water and wastewater infrastructure, satisfying the requirement for full municipal services.

The proposal therefore meets the applicable criteria for high density residential development.

Policy I.4.1.2.3 (d) *High density residential development shall have regard for the following:*

i. *Encouraged to locate where direct access to a major public road is available, and/or public transportation is available and where pedestrian linkages can be established;*
ii. *Sites that are well suited to a low building coverage and higher density because of the physical attributes of the site;*
iii. *Proximity of other high density uses;*
iv. *Impact on overall traffic network;*
v. *Located in close proximity to public open space, or alternatively provide adequate on-site outdoor recreational facilities;*
vi. *Compatibility with adjacent land uses;*
vii. *Located in close proximity to commercial services; and*
viii. *Encouraged to locate in close proximity to institutional uses/facilities such as schools.*

MP&D Comment: The proposed development has regard for the applicable high density residential criteria, with direct access to Maple Avenue and a central location within the Bala Urban Centre that provides proximity to commercial services, community facilities, and open space while supporting pedestrian connectivity. The site is well-suited to a compact, higher density built form with appropriate site coverage, representing compatible intensification within the surrounding context. The retention of the existing Legion supports continuity of a longstanding community use and enhances compatibility, while traffic generated by the development can be accommodated on the existing road network and on-site amenity space is provided to support residents.

***Policy I.4.1.2.3 (e)** *High density residential development shall not exceed 70 units per gross hectare.*

*MP&D Comment: **The proposed development exceeds the maximum permitted density of 70 units per gross hectare. The subject lands comprise approximately 0.77 hectares and, with 128 residential units proposed, result in a density of approximately 166 units per hectare. As such, the Official Plan Amendment includes an exception request for an increased density permission on the subject lands.**

The requested density is appropriate given the site's location within the Bala Urban Centre and a designated Full Service Area, where intensification is specifically encouraged to support more efficient land use patterns, a compact urban form, and the optimization of existing municipal infrastructure. The proposal represents a strategic and efficient use of underutilized land within a settlement context, contributing to the broader objectives of accommodating growth within serviced areas and reducing pressure for greenfield expansion.

Furthermore, the increased density is consistent with intensification policies that direct growth to settlement areas capable of supporting higher-order residential development, including access to municipal water and wastewater services, transportation networks, and community amenities. The proposed development supports the creation of a more complete and vibrant community by introducing a higher concentration of residential units in close proximity to existing and planned services.

Notwithstanding the numerical increase in density, the proposal can be appropriately integrated within the surrounding context subject to appropriate built form, site design, and transition considerations. In this

regard, the requested Official Plan Amendment is considered to represent good planning, as it efficiently utilizes serviced land, supports intensification objectives, and contributes to the long-term growth management strategy of the municipality.

Policy I.4.1.2.3 (f) *The permitted height of any high density structure shall be appropriate to the intensity of the development and shall not exceed the tree canopy.*

MP&D Comment: The proposed development conforms with the intent of the height policy, which requires that high-density structures be appropriate to the intensity of development and not exceed the existing tree canopy. While the proposal achieves an increased density of approximately 166 units per hectare, it does so without increasing building height beyond the tree canopy. This ensures that built form remains visually subordinate to the surrounding natural landscape and maintains the wooded character of the area. Accordingly, the development accommodates intensification through efficient land use and compact design, while respecting the established vegetative context and preserving the dominance of the tree canopy, consistent with the intent of the policy.

Section I.4.4 Institutional Designation

Policy I.4.1.1 *Permitted Uses:*

- *Community centres and areas;*
- *Day nurseries;*
- *EV charging stations;*
- *Hospitals;*
- *Long-term care facilities;*
- *Open space uses;*
- *Places of worship and other **institutional uses**; and*
- *Public service facilities.*

MP&D Comment: **An Official Plan Amendment is required to redesignate the subject lands from Institutional to Urban Residential to appropriately reflect the proposed redevelopment of the site**.

The current Institutional designation is reflective of the longstanding Bala Legion use; however, it does not align with the proposed residential redevelopment or the associated permitted uses and built form being contemplated through this application.

The requested Urban Residential designation is more appropriate in this context, as it accurately reflects the intended transition of the property

from its historical institutional function to a residential use that is consistent with the surrounding settlement structure and the Bala Urban Centre context.

This redesignation will ensure that the Official Plan permissions align with the proposed development and provide a clear policy framework to support residential intensification on a fully serviced site within a designated Full Service Area.

Section L General Development Policies

Policy L.1.1 *Planning for sewage and water services shall:*

a) Direct and accommodate expected growth or development in a manner that promotes the efficient use and optimization of:

- *Existing or planned and approved municipal sewage services and municipal water services; and*
- *Individual on-site sewage services and individual on-site water services where municipal sewage services and municipal water services are not available.*

v) Encourage development which optimizes the use of existing services before infrastructure is extended.

Policy L.1.2.a *Municipal sewage services and municipal water services are the preferred form of servicing for Urban Centres. Intensification and redevelopment within Urban Centres on existing municipal sewage services, stormwater services and municipal water services should be promoted, wherever feasible.*

Policy L.1.2.c *Special development projects that benefit the community and are in the public interest, such as social or affordable housing, community, education or public medical facilities (e.g., hospital) which are proposed in the Future Service Area and require the extension of municipal sewage services and/or municipal water services may be considered in accordance with the Muskoka Official Plan.*

MP&D Comment: The proposed development is fully consistent with Policies L.1.1 and L.1.2 of the Muskoka Official Plan.

The subject lands are located within the Bala serviced area, where municipal sewage and water services are already available. As such, the proposed redevelopment directs growth to a fully serviced Urban Centre

and makes efficient use of existing municipal infrastructure, consistent with Policy L.1.1, which promotes the optimization of existing and planned services and encourages development to occur where servicing capacity is already in place.

In accordance with Policy L.1.2(a), municipal sewage and water services are the preferred form of servicing within Urban Centres, and intensification and redevelopment on existing municipal systems is to be promoted wherever feasible. The proposed development achieves this objective by introducing residential intensification on a serviced site within the Bala Urban Centre, thereby supporting efficient infrastructure utilization and compact urban form.

Further, the proposal does not require the extension of municipal services, as it is located within an area already serviced. Accordingly, it avoids unnecessary infrastructure expansion and aligns with Policy L.1.1(v), which encourages development that optimizes existing services before extending infrastructure.

Policy L.1.2(c) is not directly applicable as the proposal does not involve servicing extensions into a Future Service Area; however, it reinforces the broader planning direction that supports growth in appropriate locations. In this case, the proposal represents a logical form of intensification within an existing serviced Urban Centre, consistent with the intent of the policy framework. Overall, the development represents efficient use of existing municipal infrastructure, supports intensification within a designated Urban Centre, and is fully consistent with the servicing policies of the Official Plan.

Policy L.3.2

It is the objective of this Plan that the Township participate in the conservation of cultural heritage resources by:

a) Preserving and building upon the cultural heritage and traditions of the Township;
b) Conserving and mitigating impacts to all protected heritage properties, significant cultural heritage landscapes and significant archaeological resources when undertaking public works; and,
c) Respecting the heritage resources recognized or designated by federal and provincial agencies.

Policy L.3.3

It is the objective of this Plan that the Township participate in the conservation of cultural heritage resources by:

a) Preserving and building upon the cultural heritage and traditions of the Township;

b) *Conserving and mitigating impacts to all protected heritage properties, significant cultural heritage landscapes and significant archaeological resources when undertaking public works; and,*
c) *Respecting the heritage resources recognized or designated by federal and provincial agencies.*

MP&D Comment: The subject lands are not identified as containing any protected heritage properties, significant cultural heritage landscapes, or registered archaeological resources, and no built heritage designation or listing applies to the property.

Notwithstanding the absence of formally recognized heritage resources, the proposed development has been designed to respect and acknowledge the longstanding presence of the Bala Legion on the site. The redevelopment provides an opportunity to retain the cultural legacy of the site through thoughtful integration and placemaking, ensuring that the historical association of the property is not lost as part of its transition to a new residential use.

In this regard, the proposal builds upon the cultural heritage and traditions of the community by incorporating design elements and site planning considerations that reference and respect the existing context, while allowing for the adaptive evolution of the property. The intent is to recognize the social and community significance of the site through redevelopment that maintains continuity of place, rather than through the preservation of specific built heritage attributes.

Policy L.3.7.1 *The requirement for an archaeological assessment may be waived for redevelopment where a site has been substantially disturbed.*

MP&D Comment: The requirement for an archaeological assessment has been waived on the basis that the subject lands have been substantially disturbed through their longstanding institutional use associated with the Bala Legion, including existing buildings, parking areas, and associated site servicing and grading.

Given the extent of historical and ongoing disturbance across the property, the potential for intact archaeological resources to remain is considered low. Accordingly, the waiver is appropriate and consistent with the policy provision that permits exemption from archaeological assessment where site conditions demonstrate sufficient prior disturbance.

Policy L.6.1 *Transportation:*

- *Ensure that Township roads continue to be effective corridors for the movement of people and goods in and throughout the Township;*
- *Promote cycling and walking as energy efficient, affordable and accessible forms of travel;*
- *Ensure that the number of entrances onto the Township road system are kept to a minimum and that only those entrances that comply with standards established by the Township are permitted;*
- *Encourage the establishment of complete streets to plan, design, and maintain streets so they are safe for all users of all ages and abilities and accommodate all anticipated users, including pedestrians, cyclists and motorists.*

MP&D Comment: The proposed development is consistent with the Township's transportation objectives. The site is accessed via Maple Avenue as the primary entrance, an existing municipal road capable of accommodating the anticipated traffic, ensuring the continued efficient movement of people and goods. Access to the site is limited and designed in accordance with Township standards, maintaining road safety and operational efficiency. The development also supports active transportation, with pedestrian-friendly design and proximity to local amenities encouraging walking and cycling.

Policy L.6.4 *Pedestrian Movement:*

- *Consider the provision of safe and convenient walking routes, cycling routes and bicycle parking in the review of all development applications;*
- *Require that parking for bicycles be provided in highly visible and lighted areas;*
- *Sidewalks or equivalent pathways, where provided shall be designed and constructed to be barrier-free for all people regardless of ability, consistent with the Accessibility for Ontarians With Disabilities Act;*

MP&D Comment: The proposed development supports the Township's objectives for active transportation and accessibility. The site design incorporates safe and convenient pedestrian connections, as well as bicycle parking facilities to encourage cycling as an alternative mode of transportation. Bicycle parking will be located in visible and accessible areas, supporting safety and ease of use.

All pedestrian pathways and access points will be designed to be barrier-free and fully accessible, consistent with the Accessibility for Ontarians with Disabilities Act (AODA), ensuring safe and inclusive mobility for users of all ages and abilities.

Section L7 Housing

Policy L.7.1.a *Attainable housing is defined as:*

- *Adequate in condition, requiring no major repairs;*
- *Appropriate in size for the makeup of the household;*
- *Affordable as defined in the Provincial Policy Statement, by the Canada Mortgage and Housing Corporation (CMHC), and/or through District of Muskoka affordable housing programs; and*
- *Accessible both physically for the individuals living in the house and located in areas where common services, amenities, transportation, and employment opportunities are available.*

Policy L.7.1.b *As part of ensuring attainable housing is available, the Township supports the provision of housing which is affordable to low and moderate-income households. In this regard, the overall target is 25% of new residential dwelling units to be attainable as defined in this Plan. This target is intended to apply on aggregate across the Township, but not necessarily to each individual site-specific development proposal. Though attainable housing is encouraged in all land use designations, Urban Centres and Community Areas provide the most appropriate locations to meet the criteria of attainability listed above.*

Policy L.7.1.c *Creative and innovative approaches to the provision of attainable housing may also be considered, including alternative development standards and forms of housing, provided that other objectives of this Plan can be achieved. In this regard, alternative development standards may include reduced minimum lot frontage requirements, higher permitted lot coverage, lower minimum landscaped area, reduced parking standards and others.*

Policy L.7.1.d *The Township, when implementing this Plan through an update of the implementing Zoning By-law or preparation of a Community Planning Permit By-law, shall identify the standards that may be impediments to the development of attainable housing and make a determination on whether they should be changed to support more attainable housing. Standards to be reviewed, amongst others, include minimum lot frontage, minimum setbacks from lot lines, maximum lot coverage, minimum landscaped area, minimum gross floor area and required parking.*

Policy L.7.1.e *Lands within the Urban Centres shall be pre-zoned to permit intensification and infill where appropriate and priority intensification areas shall be identified.*

MP&D Comment: The proposed development strongly supports the Township's housing objectives, particularly with respect to the provision of attainable, accessible, and diverse housing options. The development introduces a 128-unit rental apartment building within the Settlement Area of Bala, representing a significant contribution to the local housing supply through residential intensification on a previously developed site.

The proposal includes a target of 33% attainable housing units, exceeding the Township's target of 25% on a site-specific basis and contributing meaningfully toward achieving this target on an aggregate basis. These units are designed to be affordable to low- and moderate-income households, while also being adequate in condition and appropriate in size, with a mix of one- and two-bedroom units to accommodate a range of household types.

The development also prioritizes accessibility, with barrier-free common areas and approximately 20% of units designed to meet accessibility standards, ensuring that the housing is physically accessible and inclusive for persons of all ages and abilities. The site's location within a fully serviced Settlement Area provides residents with access to community services, amenities, transportation options, and employment opportunities, consistent with the definition of attainable housing.

The proposed built form represents a creative and efficient approach to housing delivery, utilizing a higher-density apartment format that supports attainable housing outcomes through economies of scale and efficient land use. The proposal aligns with the Plan's direction to consider alternative development standards, including increased density and reduced land consumption, in order to facilitate more attainable housing options.

Furthermore, the development reflects the policy direction to encourage intensification and infill within Urban Centres and Community Areas, where services and infrastructure are available. By making efficient use of existing municipal services and introducing a compact built form, the proposal supports the Township's objective to remove barriers to housing development and enable a broader range of housing opportunities.

Policy L.7.2 *Development Form In Designated Growth Areas:*

a) *The minimum average density target for new development in designated growth areas in the Urban Centres shall be 17 units per net hectare (i.e. per hectare of developable land, excluding natural heritage features and areas, hazardous lands, and infrastructure such as roads, stormwater management ponds, etc.).*
b) *The target in sub-section a) above applies primarily to lands that are not within an existing draft approved or registered plan of subdivision/condominium description. However, as draft approved plans/descriptions are reviewed for possible extension, increases in the average density shall be encouraged in an effort to achieve the target.*
c) *In order to provide additional flexibility for new development, consideration shall be given in the implementing Zoning By-law or Community Planning Permit By-law to reducing minimum lot frontage requirements for single-detached and semi-detached dwellings.*
d) *The overall housing mix target in the two urban centres is 80% low density, 15% medium density and 5% high density. These targets apply primarily to lands that are outside of an existing draft approved or registered plan of subdivision/condominium description. However, as draft approved plans/descriptions are reviewed for possible extension, diversifying the housing mix shall be encouraged in an effort to achieve the targets.*

MP&D Comment: The proposed development supports the Development Form policies for Designated Growth Areas by delivering a compact, high-density residential form within the Settlement Area of Bala. The subject lands comprise approximately 0.77 hectares, and with 128 residential units, the proposal achieves a density of approximately 166 units per net hectare, significantly exceeding the minimum target of 17 units per net hectare. This reflects an efficient use of land and infrastructure and contributes to broader municipal density objectives.

While the Plan identifies a housing mix target of 80% low density, 15% medium density, and 5% high density, these targets are intended to be achieved on an aggregate basis across the municipality. In this context, the proposed development contributes to the diversification of the housing stock by introducing a form of high-density housing that is currently limited within the Township, thereby helping to balance the overall housing mix over time.

The proposal represents an appropriate form of intensification and redevelopment on a previously developed site, consistent with policy direction to encourage increased density and a broader range of housing options. The apartment form also supports attainable housing objectives, including approximately 33% attainable units, which would be difficult to achieve through traditional low-density development patterns.

Section L9 Sustainable & Healthy Communities

Policy L.9 *It is the intent of the Township to continuously require that development and redevelopment be carried out in a manner that furthers the goals and objectives of this Plan, and particularly those that deal with sustainable development and healthy communities.*

In addition to the above, the Township shall also consider developing and implementing a range of appropriate mechanisms and tools to promote and facilitate new development and redevelopment that addresses the sustainability objectives and policies of this Plan.

Policy L.9.5 *The following shall be considered by the Township in the review of applications for development where permitted by the Planning Act:*

- *i. The orientation of buildings should maximize passive solar gain in consideration of site vegetation;*
- *ii. Interior and exterior building materials should be sourced from renewable and sustainable sources;*
- *iii. Exterior building materials should have thermal properties that effectively manage heat and glare throughout all seasons;*
- *iv. Buildings should be designed, constructed and fitted to maximize energy efficiency;*
- *v. The design of buildings and sites shall accommodate the separation and collection of organic waste for compost, dry recyclables such as plastic and paper, and waste;*
- *vi. Permeable surfaces or "softscaping" should be maximized in landscaping, walkway, driveway and parking areas to maximize water infiltration, filtration, absorption and detention, and minimize heat island effects;*
- *vii. Native grass, flower, tree and other plant species are encouraged in landscaping areas to minimize water consumption, insect infestation, and invasive species;*
- *viii. Green roofs, incorporating soil beds and plantings, are encouraged where appropriate and feasible;*
- *ix. Exterior and interior lighting should be energy efficient and mitigated to the extent possible to minimize light pollution;*

x. *Large windows should include design treatments that prevent bird collisions; and*

xi. *Facilities such as bicycle loops and lockers are encouraged to be located outside buildings to support active transportation.*

MP&D Comment: The redevelopment of the subject lands within the Bala Urban Centre and fully serviced area represents a sustainable form of growth by directing intensification to an existing settlement area, thereby making efficient use of established municipal infrastructure and reducing pressure for greenfield expansion. This approach is consistent with broader sustainability objectives related to compact urban form and infrastructure efficiency.

At the site planning and design stage, the proposal will incorporate a range of sustainable development considerations, where feasible and appropriate, in accordance with the policy guidance. This includes opportunities to optimize building orientation, integrate energy-efficient building design and materials, and incorporate lighting strategies that minimize light spill and reduce energy consumption. The development will also support waste diversion through provision for appropriate storage and collection of recyclables and organic waste.

Landscape design will be informed by sustainable principles, including opportunities for native and drought-tolerant plantings, enhanced soft landscaping where feasible, and the use of permeable surfaces where appropriate to support stormwater infiltration and reduce heat island effects. Opportunities to support active transportation will also be considered through bicycle-friendly design elements.

While not all measures are applicable or fully determinable at the planning approval stage, the proposal establishes a framework for sustainable development that will be further refined through detailed site plan approval. Overall, the development is consistent with the intent of the policy to promote sustainable, energy-efficient, and healthy community design within a compact, serviced Urban Centre context.

It is the opinion of the undersigned that the development and associated applications, are consistent with the policy direction provided by the Township's Official Plan.

10.5 TOWNSHIP OF MUSKOKA LAKES ZONING BY-LAW

The Township of Muskoka Lakes Zoning By-law implements the objectives and policy direction of the Official Plan.

The Township of Muskoka Lakes Zoning By-law (2014-14) currently zones the subject lands as follows:

- *'Institutional (I) – Exemption (87-1781)'*

The existing zoning was previously illustrated in ***Figure 12.***

An overview of Zoning By-law 2017-104 is provided earlier in this report, outlining the previously approved Zoning By-law Amendment for the subject lands.

10.5.1 ZONING BY-LAW AMENDMENT (ZBA) APPLICATION

A Zoning By-law Amendment (ZBA) application has been submitted to the Township to implement the proposed redevelopment of the subject lands. The purpose of the ZBA is to establish appropriate zoning permissions to facilitate the intended development.

To achieve this, the amendment proposes to rezone the subject lands to a site-specific zone within the Community Residential Zone category, specifically '***Multiple Residential High Density – Exception (RM2-XX) – Sewer and Water'***.

A Draft Zoning By-law Amendment and Schedule are included as ***Appendix C.***

10.5.2 ZONING BY-LAW ANALYSIS

The following provides an overview of the proposed development in relation to the requested '*Multiple Residential High Density (RM2) – Sewer and Water*' zone.

Table 1: Zoning Compliance Matrix Section 5.0 – Community Zones Urban Centres – RM2 Zone		
Provision	**Required / Permitted**	**Proposed / Existing**
Permitted Uses	Residential Apartment Dwelling	Residential Apartment Dwelling Ground Floor Commercial • Bala Legion • Medical Clinic
Minimum Lot Frontage	30.5 m (100 ft)	47.77m (165.73 ft)
Minimum Lot Area	0.09 ha (0.2 ac.)	7,725.65 m² 1.91 acres 0.77 hectares
Maximum Lot Coverage	35%	41 %
Minimum Front Yard Setback	7.6 m (25 ft)	7.7m
Minimum Interior Side Yard Setback	7.6 m (25 ft)	8.6m
Minimum Exterior Side Yard Setback	7.6 m (25 ft)	N / A
Minimum Rear Yard Setback	7.6 m (25 ft)	13m
Maximum Height	10.7 m (35 ft)	22m Maximum Requested 4-Storey Built Form 21m (Victoria – east) 19m (Maple – west) *Includes mechanical pent house.
Maximum Height – Accessory Building	6.1 m (20 ft)	No accessory building proposed – Any will comply
Minimum Landscaped Area	35%	27%
Multiple Dwellings		

Minimum Floor Area	Bachelor - 26.9 m² (290 ft.²) 1 Bedroom - 33 m² (355 ft.²) 2 Bedroom - 39 m² (420 ft.²) 3 Bedroom - 45.1 m² (485 ft.²)	1B-42.4m² (456.4 ft.²) 2B-79.6m² (856.8 ft.²)"
Parking Setback	In the case of a multiple dwelling and apartment dwelling only, no parking space shall be located within 3 m (10 ft.) of a lot line.	Complies
Landscaped Buffer	Where a multiple dwelling or apartment dwelling, greater than 3 units abuts a single family residential zone (R1, R2, R3, or R4), 3 m (10 ft.) of the required yard shall be used and maintained as a landscaped buffer.	South lot line adjacent to R1 zones: Provided – soft and hardscape
Special Provisions: RM2 Zone		
Permitted Density	In a Multiple Residential High Density (RM2) zone the density of development shall not exceed 60 dwelling units per hectare (24 units/acre) in addition to the requirements of Section 5.1.4.3 of this By-law.	166 units per hectare.
Parking Provisions		
Apartment Dwellings (i.e. triplex, fourplex)	1.75 spaces per dwelling unit, plus 1 visitor parking space per 2 dwelling units or part thereof.	0.44 space per unit 56 spaces on-site. (56 / 128 units = 0.44) 81 off-site spaces under consideration (shared, public spaces)
Barrier Free Spaces	1 parking space per 25 parking spaces required based on the use as described in Table 3.28; and 1 additional parking space per 25 or more parking spaces required based on Table 3.28.	0.44 space per 25 parking spaces

10.5.3 ZONING BY-LAW AMENDMENT REVIEW

The proposed Zoning By-law Amendment represents good planning and is appropriate within the context of the Township and applicable County/upper-tier Official Plan policy framework. These policies collectively promote efficient land use, residential intensification, and a diversified housing supply within designated settlement areas. The subject lands are situated within a settlement context where higher-density forms of development are both anticipated and encouraged, particularly where municipal servicing can be efficiently provided and where development contributes to the creation of complete, compact communities. In this regard, the proposed amendment facilitates the efficient use of land and existing or planned infrastructure, while avoiding the need for expansion into non-settlement areas.

At both the District and Township levels, policy direction clearly supports increased density and intensification as fundamental components of sustainable growth management. These policies aim to optimize infrastructure investment, support fiscally responsible development, and minimize impacts on agricultural lands and natural heritage features. The proposed amendment implements these objectives by permitting a higher-density residential form than currently allowed, thereby maximizing the development potential of a serviced or serviceable site within a designated growth area. The proposal also contributes to achieving established density targets and supports the long-term viability and efficiency of municipal services.

To implement the proposed development, site-specific zoning provisions are required to permit appropriate exceptions to certain performance standards. These provisions are intended to facilitate a compact, efficient, and well-designed form of development that responds to the site's context and constraints. The requested permissions support an optimized site layout, improved building siting and massing, and a development form that is consistent with contemporary planning and urban design principles. Through appropriate design measures and technical review, the development can be integrated with the surrounding area in a manner that avoids adverse impacts and ensures compatibility.

Importantly, the proposed amendment advances broader housing objectives at both the Provincial and municipal levels by contributing to an increased supply of housing and supporting a more diverse range of unit types. Planning policy increasingly recognizes that achieving housing affordability and choice requires flexibility in zoning standards and the strategic accommodation of intensification in appropriate locations. The subject lands are well suited to accommodate this form of development given their location, servicing context, and compatibility with the surrounding and planned land use framework.

In summary, the proposed Zoning By-law Amendment is appropriate, represents good planning, and is consistent with the applicable policy framework. The requested site-specific provisions are reasonable and justified, and collectively enable a development that is efficient, contextually appropriate, and aligned with the long-term planning vision for the settlement area.

11.0 CONCLUSION

This Planning Justification Report has been prepared in support of Official Plan Amendment (OPA) and Zoning By-law Amendment (ZBA) applications for the subject lands (1011 Maple Avenue) located within the Settlement Area of Bala in the Township of Muskoka Lakes.

The proposal contemplates the redevelopment of a previously developed site to accommodate a 128-unit residential apartment building, together with a new Legion space and medical clinic at grade, forming a mixed-use development that integrates residential and community functions within a compact and efficient built form.

A key objective of the proposal is to introduce attainable rental housing options that are currently limited within the community. The development includes a range of unit types, including one- and two-bedroom units, with a target of 33% of units identified as attainable housing and 20% designed to meet accessibility standards. This approach supports a broader range of housing needs, including those of seniors, smaller households, and moderate-income residents, while promoting inclusivity and long-term housing stability.

The proposed development conforms with the applicable Provincial, District, and Township policy framework, all of which direct growth and intensification to designated Settlement Areas. The proposal represents an efficient use of land and infrastructure, achieving a density that exceeds directed minimum targets, while contributing to the development of a complete, compact, and sustainable community. The integration of the Legion space further supports community identity, social interaction, and the continued use of the lands for important local functions.

Supporting technical studies and supporting materials have been prepared in support of the application, addressing matters including servicing, transportation, environmental considerations, and site design. These materials demonstrate that the subject lands are suitable for the proposed development, that the site can be appropriately serviced, and that the development can be integrated with the surrounding area in a manner that is both functional and compatible.

The proposed amendments establish a site-specific planning framework that facilitates the redevelopment of the lands while allowing for further refinement through Site Plan Approval and Building Permit processes. This ensures that detailed design elements, including site layout, built form, landscaping, and servicing, will be addressed comprehensively at subsequent stages.

Overall, the proposal represents a policy-supported and contextually appropriate form of intensification, delivering much-needed rental and attainable housing within a serviced Settlement Area. The development contributes to the efficient use of land and infrastructure, enhances housing choice, and supports the creation of a complete and inclusive community within Bala.

It is the professional planning opinion of the undersigned that the proposed development represents good land use planning and is in the public interest.

Respectfully submitted,
MORGAN Planning & Development Inc.

James Hunter, BURPL, MCIP, RPP
Senior Planner

Joshua Morgan, MCIP, RPP
Principal Planner

APPENDICES

Appendix A – Site Plan & Architectural Drawings

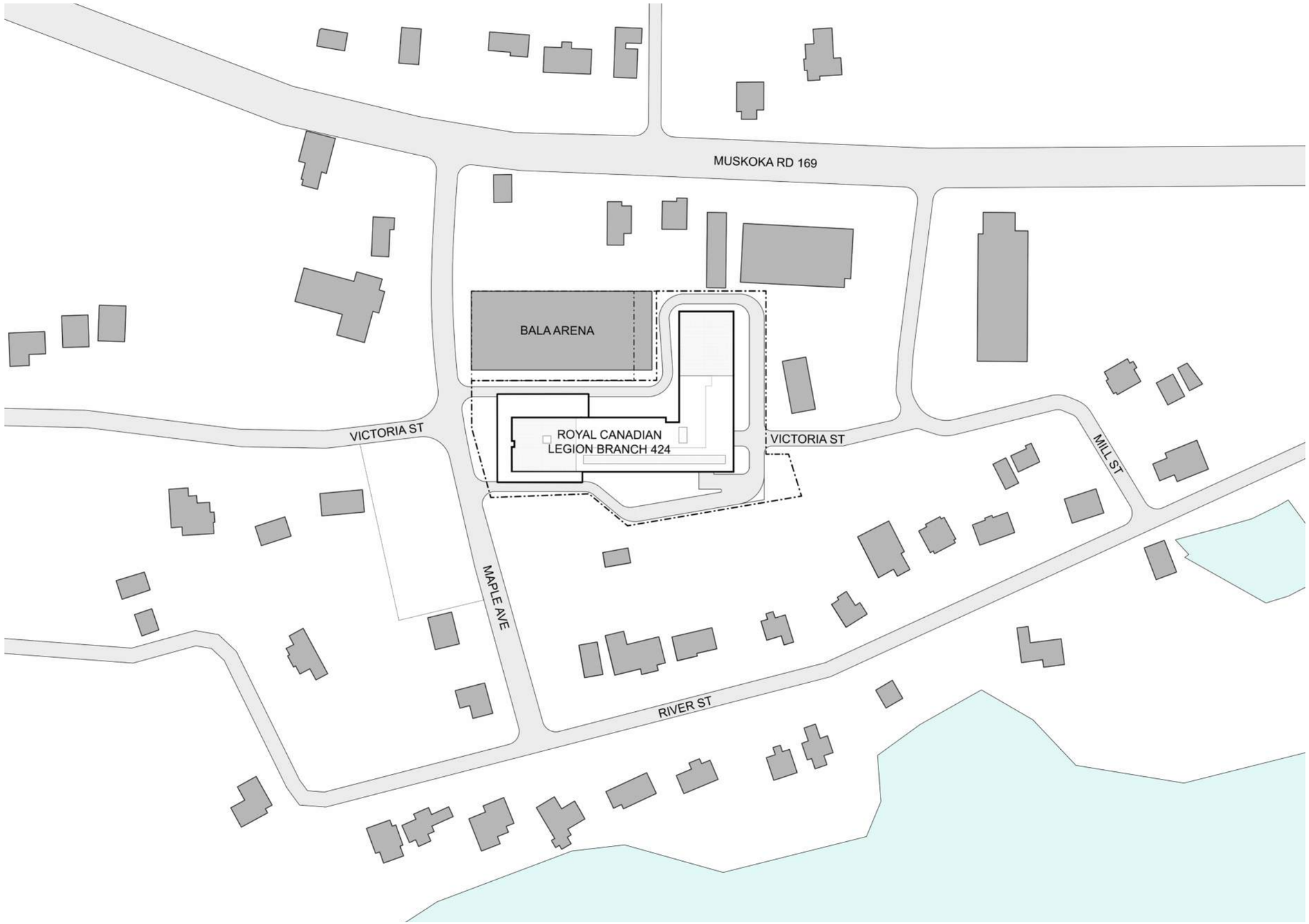
ROYAL CANADIAN LEGION

BALA LEGION HERITAGE MANOR

1011 MAPLE AVE. BALA

WZMH

CONTEXT PLAN



1:1200

WZMH

SITE PLAN

The Royal Canadian Legion, Bala, located at 1011 Maple Avenue on Lake Muskoka, has served as a community hub since its founding in 1946. Established by returning Second World War veterans, it now welcomes both veterans and non-veterans, offering support services, meals, concerts, games, and hall rentals. Beyond its role as a gathering place, the Legion contributes to the community through charitable programs such as Meals on Wheels and Christmas hampers, maintaining its reputation as a warm and welcoming centre of Bala life.



WZMH

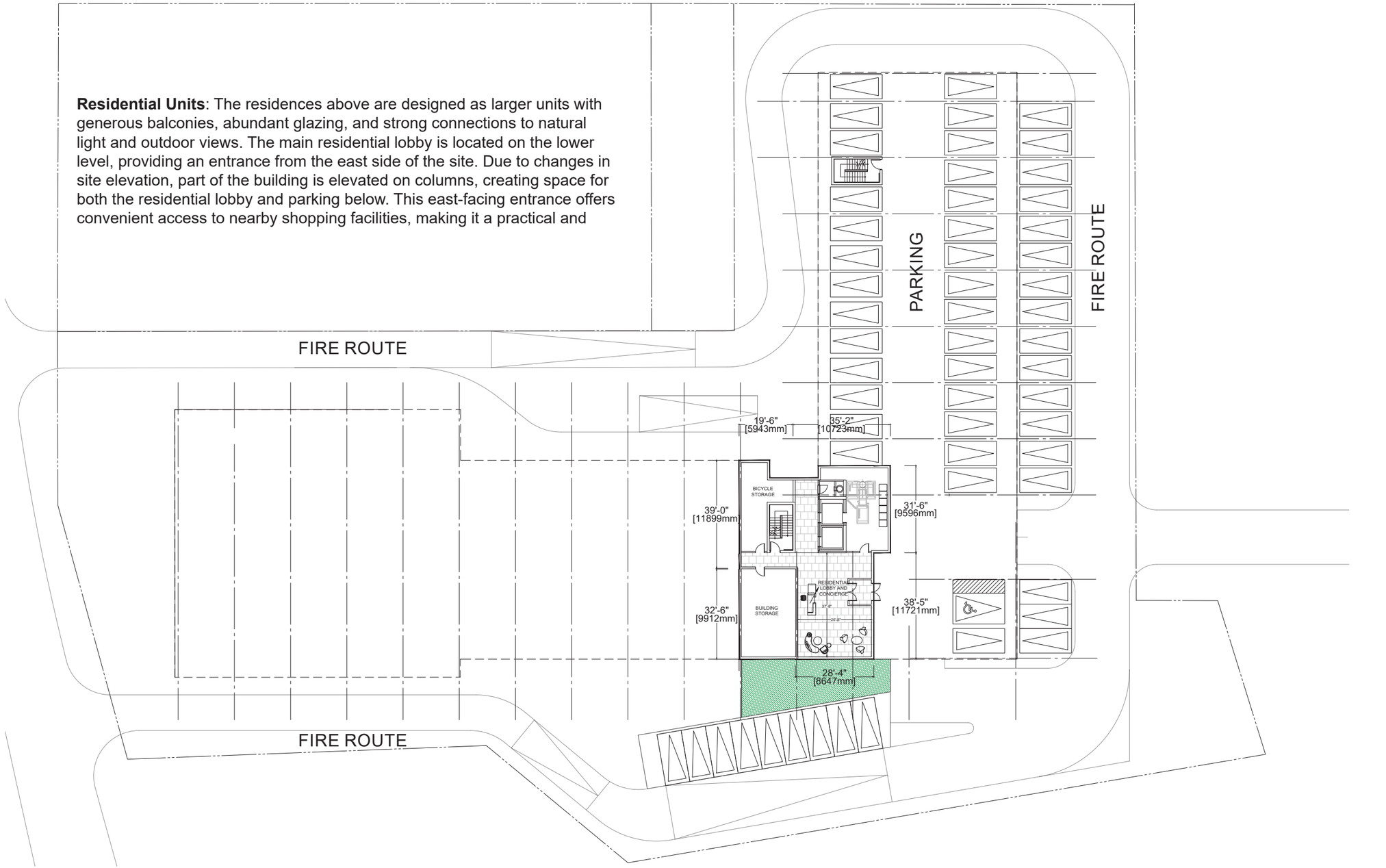
LEVEL P1

STATS. LEVEL P1

GBA/floor: 267.8m² - 2883ft²

Parking: 56

Residential Units: The residences above are designed as larger units with generous balconies, abundant glazing, and strong connections to natural light and outdoor views. The main residential lobby is located on the lower level, providing an entrance from the east side of the site. Due to changes in site elevation, part of the building is elevated on columns, creating space for both the residential lobby and parking below. This east-facing entrance offers convenient access to nearby shopping facilities, making it a practical and



WZMH

LEVEL 1

STATS. LEVEL 1

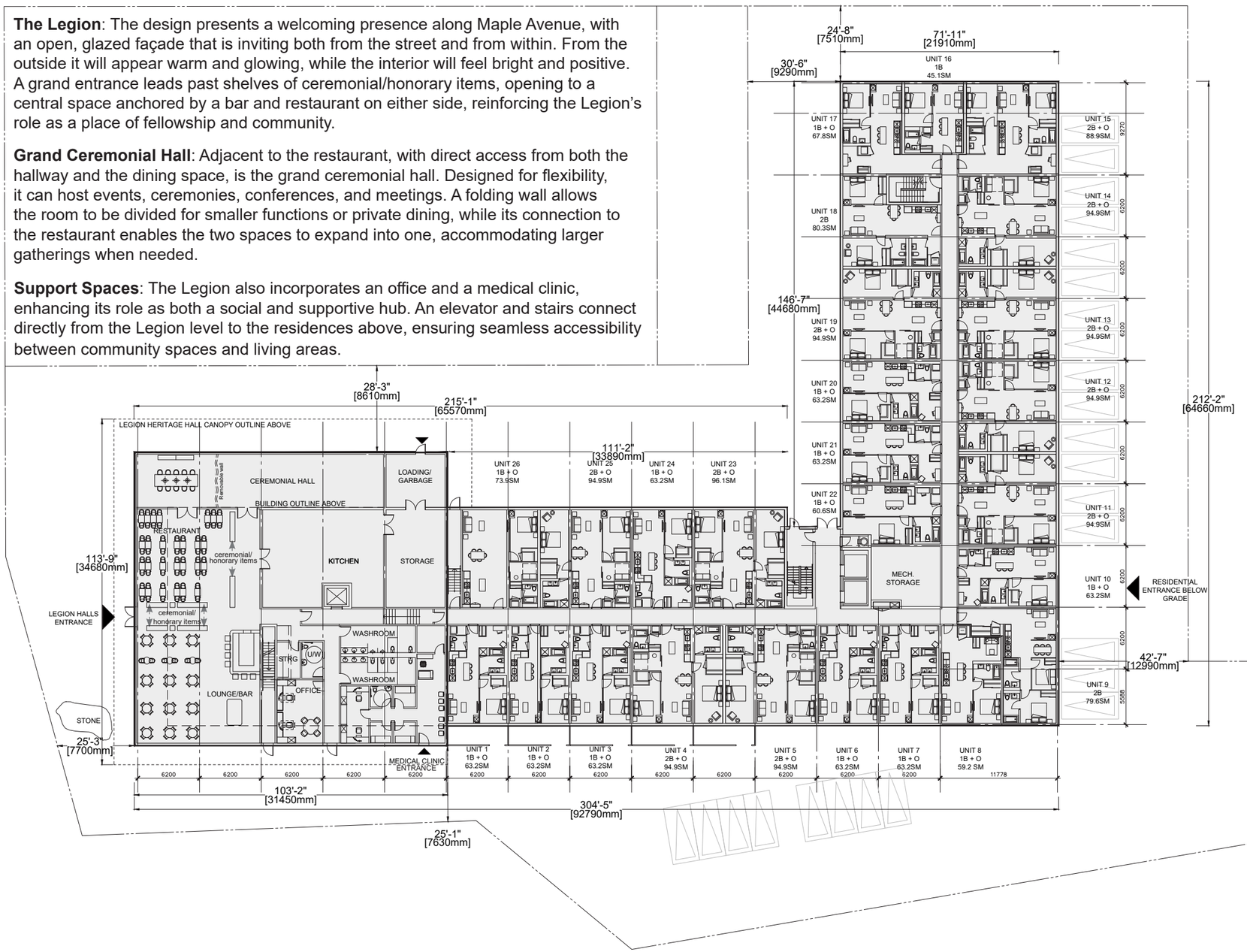
GBA/floor: 3121.8m² - 33603ft²

1B	1 units/floor
1B + Office	13 units/floor
2B	2 units/floor
2B + Office	10 units/floor
	26 units/floor

The Legion: The design presents a welcoming presence along Maple Avenue, with an open, glazed façade that is inviting both from the street and from within. From the outside it will appear warm and glowing, while the interior will feel bright and positive. A grand entrance leads past shelves of ceremonial/honorary items, opening to a central space anchored by a bar and restaurant on either side, reinforcing the Legion's role as a place of fellowship and community.

Grand Ceremonial Hall: Adjacent to the restaurant, with direct access from both the hallway and the dining space, is the grand ceremonial hall. Designed for flexibility, it can host events, ceremonies, conferences, and meetings. A folding wall allows the room to be divided for smaller functions or private dining, while its connection to the restaurant enables the two spaces to expand into one, accommodating larger gatherings when needed.

Support Spaces: The Legion also incorporates an office and a medical clinic, enhancing its role as both a social and supportive hub. An elevator and stairs connect directly from the Legion level to the residences above, ensuring seamless accessibility between community spaces and living areas.



0 5 10 20

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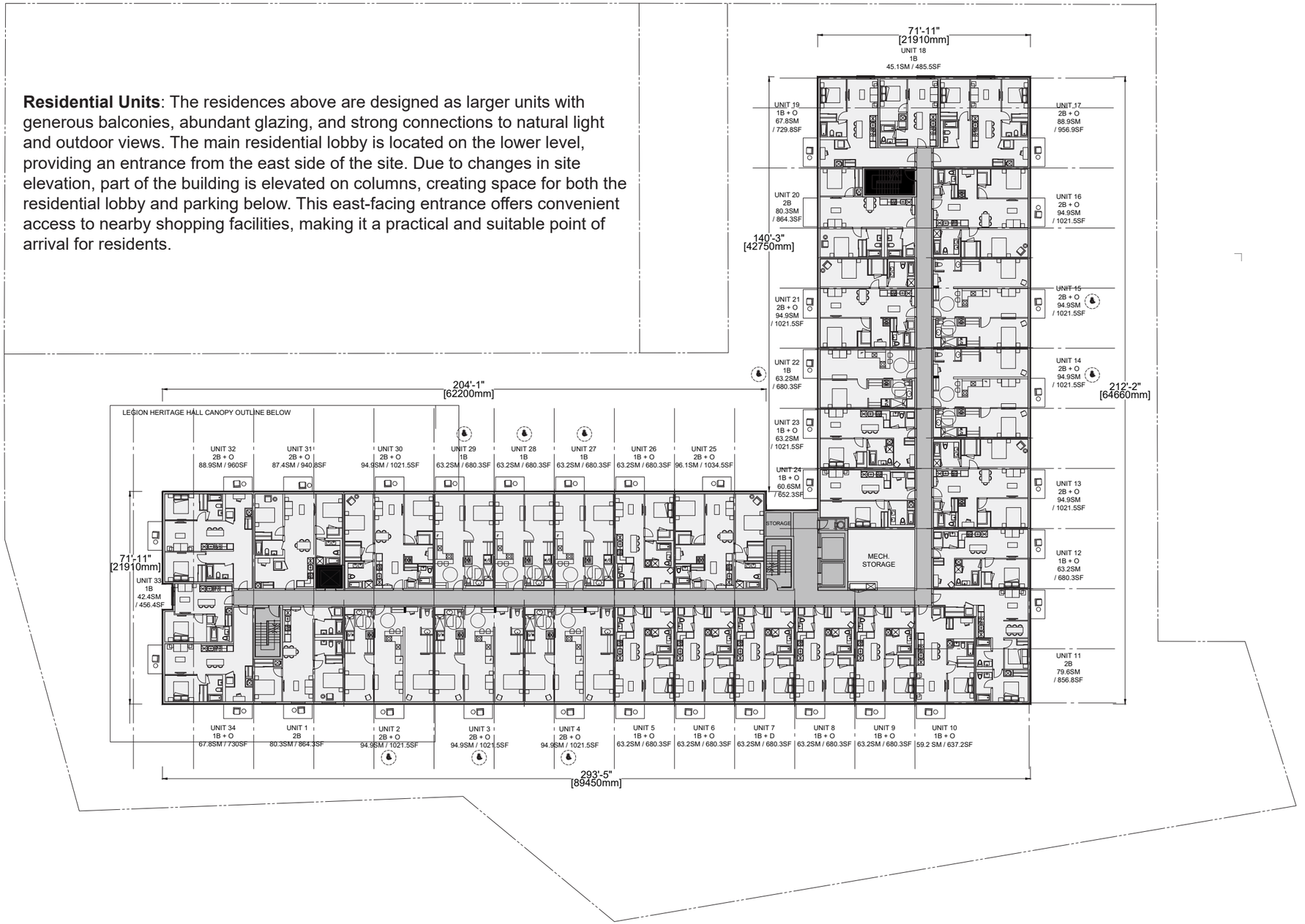
TYPICAL FLOOR

STATS. LEVEL 2

GBA/floor: 2888m² - 31086ft²

1B	2 units/floor
1B + Office	12 units/floor
2B	3 units/floor
2B + Office	5 units/floor
	34 units/floor

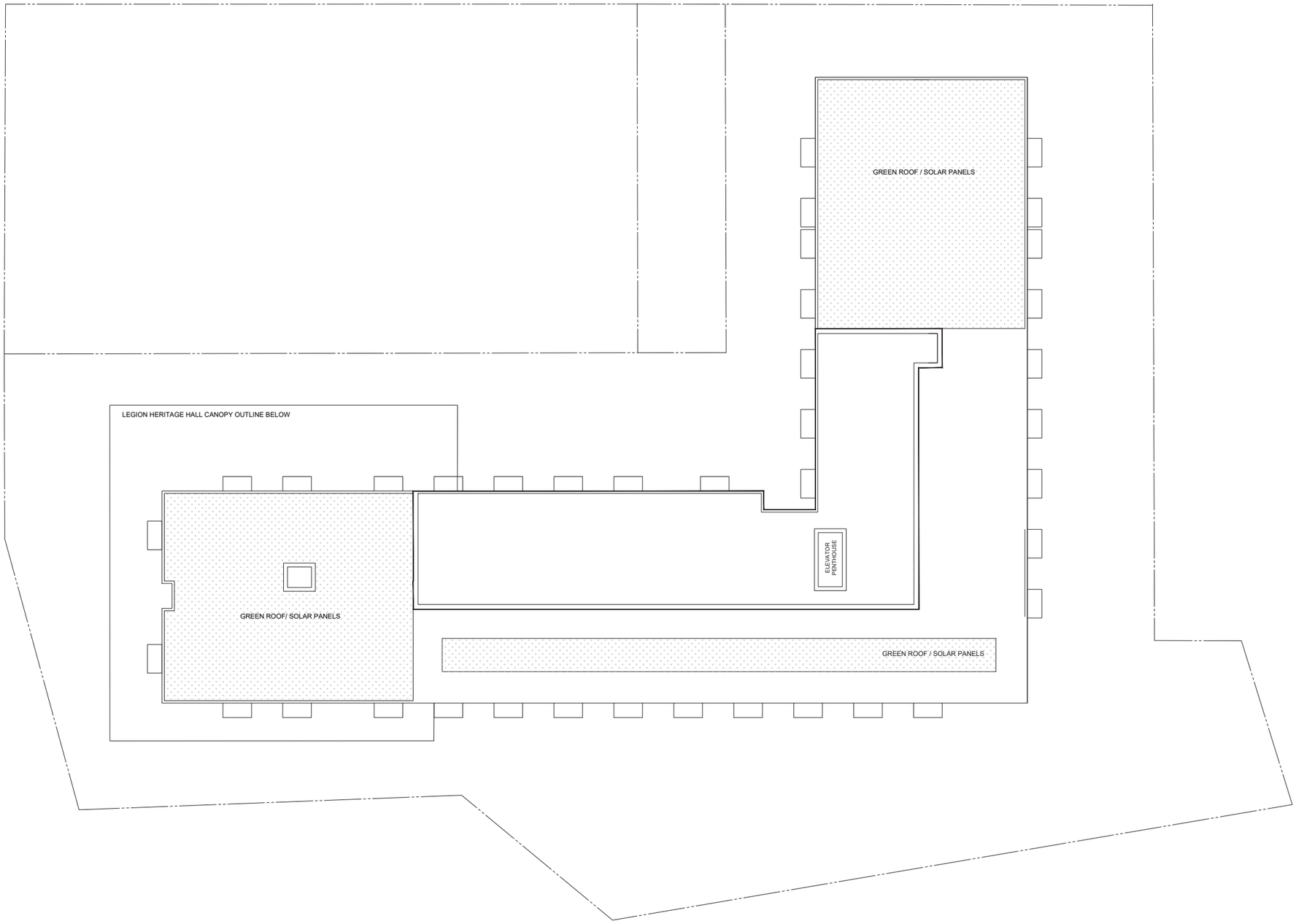
Residential Units: The residences above are designed as larger units with generous balconies, abundant glazing, and strong connections to natural light and outdoor views. The main residential lobby is located on the lower level, providing an entrance from the east side of the site. Due to changes in site elevation, part of the building is elevated on columns, creating space for both the residential lobby and parking below. This east-facing entrance offers convenient access to nearby shopping facilities, making it a practical and suitable point of arrival for residents.



0 5 10 20

WZMH

ROOF



0 5 10 20

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STATS

SITE AREA (sm)	7,728.35
TOTAL GBA (sm)	12,135.10
TOTAL GFA (sm)	11,557.46
DENSITY- (GFA / GROSS SITE AREA)	1.57
LOT COVERAGE	41%

PROPOSED BUILDING AREA					
		LEGION GBA		RESIDENTIAL GBA	
		sm	sf	sm	sf
LOWER LEVEL		-	-	268	2,883
GROUND		930.8	10,019	2,275	24,488
2ND		-	-	2,888	31,086
3RD		-	-	2,888	31,086
4TH		-	-	2,888	31,086
TOTAL		**930.8**	**10019.0**	**11206.8**	**117746.3**

UNIT MIX								
LEVEL	UNIT TYPE							
	stiudo	1B	1B+O*	1B BF**	2B	2B + O*	2B+O* BF**	TOTAL
GROUND	0	1	13	0	2	10	0	26
2ND		2	12	4	3	8	5	34
3RD		2	12	4	3	8	5	34
4TH		2	12	4	3	8	5	34
TOTAL		7	49	12	11	34	15	128
PERCENTAGE	0%	53%			47%			100%
* OFFICE								
** BARRIER-FREE								

BUILDING HEIGHT		
		HEIGHT (M)
MAPLE AVE	Building height (exclude MPH)	14
	Building height (include MPH)	19
VICTORIA ST	Building height (exclude MPH)	16
	Building height (include MPH)	21

PARKING COUNT	
Type	Count
Standard Parking Spaces	55
Barrier Free Spaces	1
Total Parking Space Provided	**56**

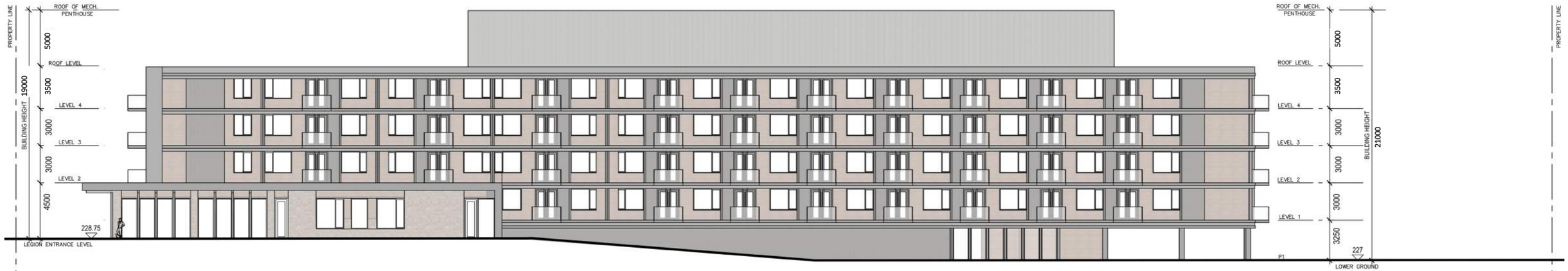
Zoning Compliance Matrix		
Provision	**Required / Permitted**	**Proposed / Existing**
Permitted Uses	Residential Apartment Dwelling	Residential Apartment Dwellings Ground Floor Commercial (Bala Legion)
Minimum Lot Frontage	30.5 m (100 ft)	47.77m (155.73')
Minimum Lot Area	0.09 ha (0.2 ac.)	7,725.65 m^2 1.91 acres 0.77 hectares
Maximum Lot Coverage	35%	41%
Minimum Front Yard Setback	7.6 m (25 ft)	7.7m (25'-3")
Minimum Interior Side Yard Setback	7.6 m (25 ft)	8.6m (28'-3")
Minimum Exterior Side Yard Setback	7.6 m (25 ft)	N / A
Minimum Rear Yard Setback	7.6 m (25 ft)	13m (42'-7")
Maximum Height	10.7 m (35 ft)	20.2m
Maximum Height-Accessory Building	6.1 m (20 ft)	No accessory building proposed – any will comply
Minimum Landscaped Area	35%	27%
Multiple Dwellings		
Minimum Floor Area	Bachelor - 26.9 m^2 (290 $ft.^2$) 1 Bedroom - 33 m^2 (355 $ft.^2$) 2 Bedroom - 39 m^2 (420 $ft.^2$) 3 Bedroom - 45.1 m^2 (485 $ft.^2$)	1B-42.4m^2 (456.4 $ft.^2$) 2B-79.6m^2 (856.8 $ft.^2$)
Parking Setback	In the case of a multiple dwelling and apartment dwelling only, no parking space shall be located within 3 m (10 ft.) of a lot line.	Complies
Landscaped Buffer	Where a multiple dwelling or apartment dwelling, greater than 3 units abuts a single family residential zone (R1, R2, R3, or R4), 3 m (10 ft.) of the required yard shall be used and maintained as a landscaped buffer.	South lot line adjacent to R1 zones: Provided – soft and hardscape
Special Provisions: RM2 Zone		
Permitted Density	In a Multiple Residential High Density (RM2) zone the density of development shall not exceed 60 dwelling units per hectare (24 units/acre) in addition to the requirements of Section 5.1.4.3 of this By-law.	166 units per hectare.
Parking Provisions		
Apartment Dwellings (i.e. triplex, fourplex)	1.75 spaces per dwelling unit, plus 1 visitor parking space per 2 dwelling units or part thereof.	0.44 space per unit
Barrier Free Spaces	1 parking space per 25 parking spaces required based on the use as described in Table 3.28; and 1 additional parking space per 25 or more parking spaces required based on Table 3.28.	0.44 space per 25 parking spaces

WZMH

NORTH AND SOUTH ELEVATIONS



NORTH ELEVATION



SOUTH ELEVATION

0 5 10 20

WZMH

EAST AND WEST ELEVATIONS



EAST ELEVATION

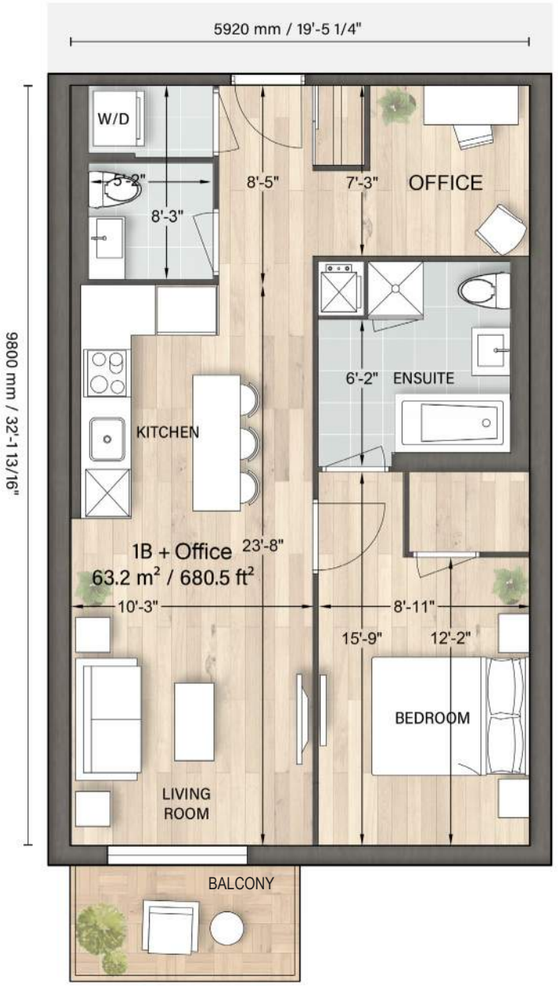


WEST ELEVATION

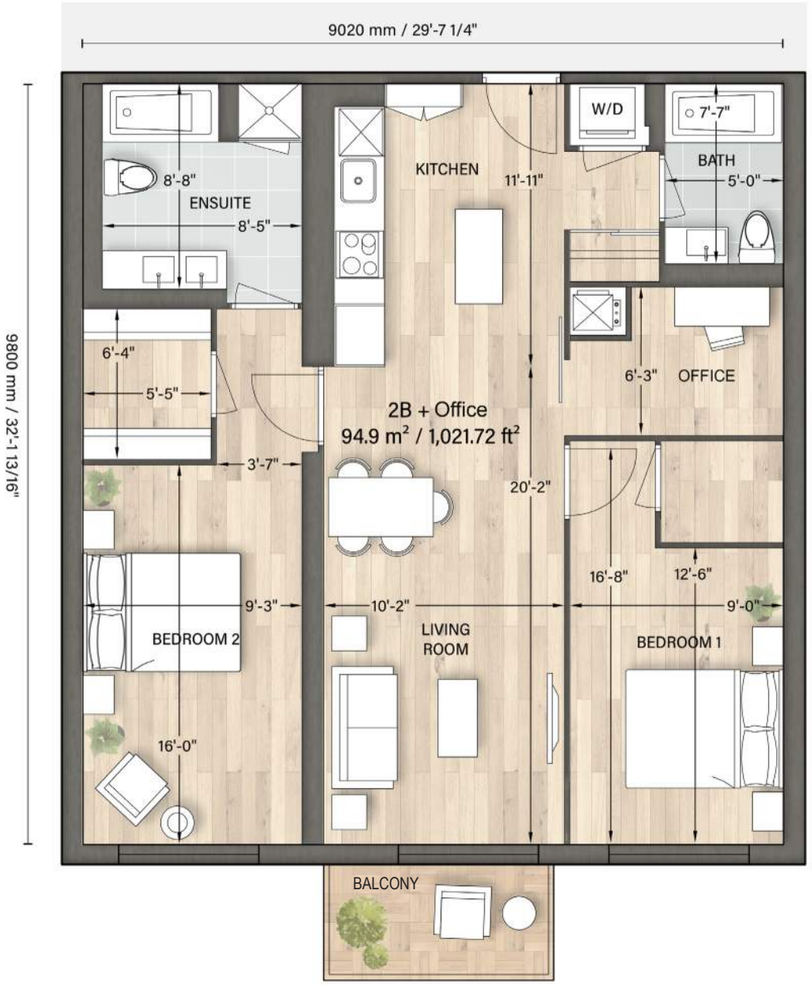
0 5 10 20

WZMH

TYPICAL UNIT LAYOUT



ONE BEDROOM + OFFICE

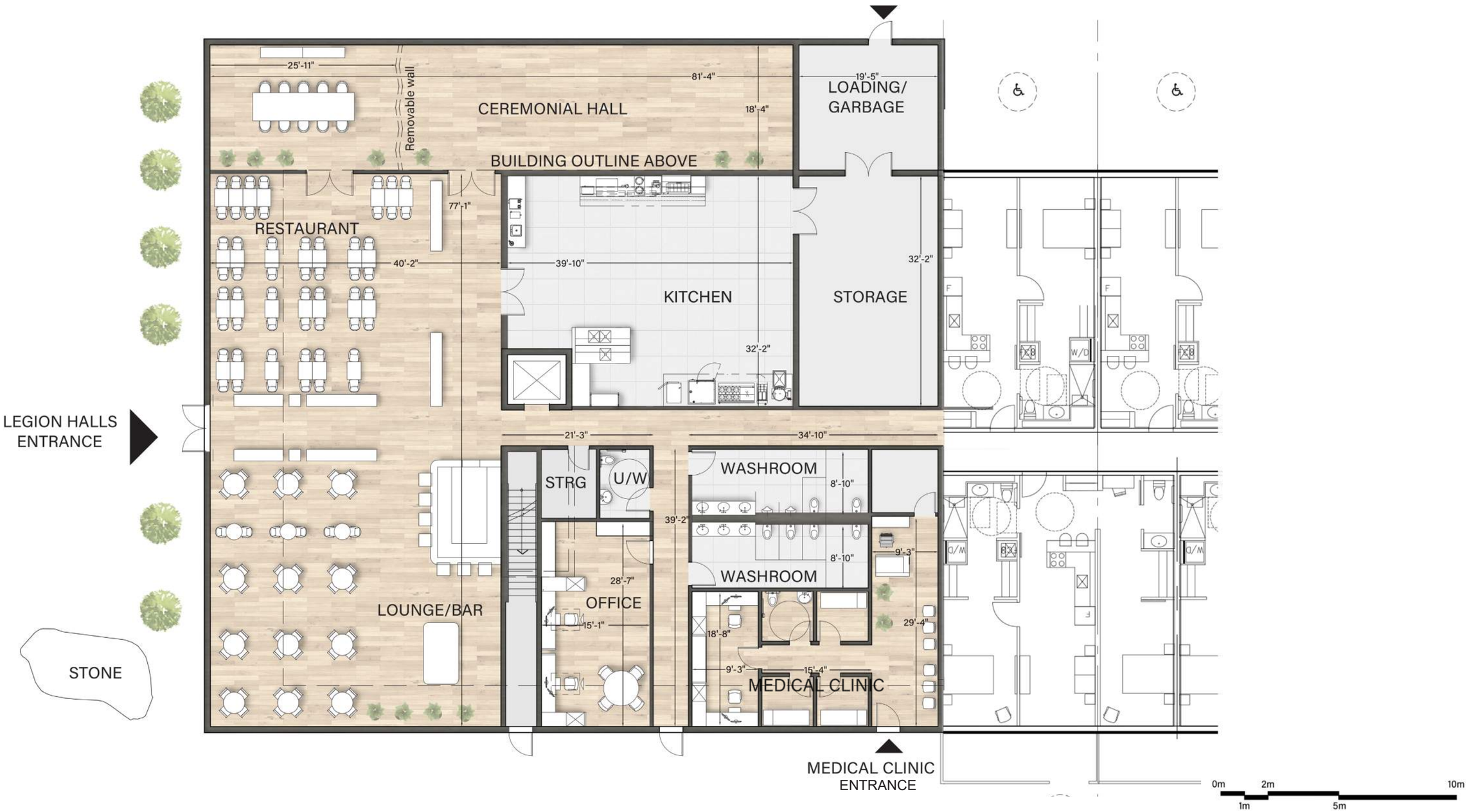


TWO BEDROOMS + OFFICE

0m 1m 2m 5m

WZMH

ROYAL CANADIAN LEGION LAYOUT



WZMH

ELEVATION WEST

The facade of the single-storey Legion blends expansive glazing with stone and warm wood textures. Inspired by Muskoka's natural palette, the design pairs earthy tones with dark-framed windows, creating a grounded yet contemporary character.



WZMH

ELEVATION SOUTH

Expansive glazing and warm wood textures inspired by Muskoka’s natural palette, emphasizes a balance between transparency and material weight.



WZMH

ENTRANCE TO LEGION HALLS



WZMH

Appendix B – Draft Official Plan Amendment & Schedule

AMENDMENT NO. _____.

TO THE TOWNSHIP OF MUSKOKA LAKES OFFICIAL PLAN

The attached explanatory text and schedules constituting Amendment No. ____ to the Official Plan of the Township of Muskoka Lakes was prepared for and recommended to the Council of the Corporation of the Township of Muskoka Lakes.

This amendment to the Township of Muskoka Lakes Official Plan was adopted by the Council of the Corporation of the Township of Muskoka Lakes in accordance with Sections 17 and 22 of the Planning Act, R.S.O. 1990, c. P.13, as amended.

Read a First, Second and Third Time and Finally Passed this _____day of _____, 2026.

The Corporation of the Township of Muskoka Lakes

_____ Mayor

_____ Clerk

AMENDMENT NO. _____.
TO THE TOWNSHIP OF MUSKOKA LAKES OFFICIAL PLAN

PART 1 – THE PREAMBLE

1.1 TITLE

This Amendment, when approved by the District Municipality of Muskoka, shall be known as Amendment No. ____ to the Township of Muskoka Lakes Official Plan.

1.2 COMPONENTS

This Amendment consists of the text and schedules as outlined in Part 2 titled "The Amendment." The preamble does not constitute part of the Amendment but is included for convenience purposes.

1.3 PURPOSE OF AMENDMENT

The purpose of this Official Plan Amendment is to redesignate the subject lands from ***'Institutional'*** *to* ***'Urban Residential – Exception'*** in order to facilitate the redevelopment of the site for a mixed-use development consisting of a residential apartment building integrated with community-serving uses, including the Bala Legion and a small-scale medical clinic.

The amendment also seeks to permit an increase in the maximum permitted density for high-density residential development beyond the current limit of 70 units per gross hectare, in order to accommodate the proposed development, which represents a compact and efficient form of intensification within the Bala Urban Centre.

Together, these changes establish an appropriate policy framework that reflects the evolving function of the site, supports a compatible mix of uses, and enables an enhanced level of residential density within a serviced settlement area.

1.4 LOCATION

The subject lands are located within the Bala Urban Centre / Settlement Area, Township of Muskoka Lakes, and are municipally known as 1011 Maple Avenue.

The lands are currently designated *'Institutional'* on Schedule B2 – Bala Land Use and within the Urban Centres and Community Areas designation on Schedule A – Land Use.

1.5 BASIS OF THE AMENDMENT

This Amendment facilitates the redevelopment of the subject lands from their historic institutional use associated with the Bala Legion to a residential intensification opportunity within the Bala Urban Centre.

The proposed **Urban Residential – Exception** designation establishes an appropriate policy framework to support redevelopment on a fully serviced site within a designated Urban Centre, where intensification is encouraged and municipal infrastructure is available to support growth.

An amendment to Policy I.4.1.2.3(e) is required to permit the proposed density of approximately 166 units per gross hectare, which exceeds the current maximum permission of 70 units per gross hectare for high-density residential development.

The requested **Urban Residential – Exception** designation provides the appropriate policy framework to support the proposed form and intensity of development on a fully serviced site within a designated Urban Centre. The proposal represents efficient use of existing municipal infrastructure, supports intensification objectives, and aligns with broader planning policy direction encouraging compact growth within Settlement Areas.

The development has also been designed in a manner that maintains appropriate built form sensitivity to the surrounding natural environment, including height limitations that ensure development remains below the existing tree canopy.

PART 2 – THE AMENDMENT

2.1 PREAMBLE

The amendment consisting of the schedules and text referred to in Subsection 2.2 below constitutes Amendment No. ____ to the Official Plan of the Township of Muskoka Lakes.

2.2 DETAILS OF THE ACTUAL AMENDMENT

- That Schedule B2 – Bala Land Use to the Township of Muskoka Lakes Official Plan is hereby amended, in part, by redesignating the subject lands from '*Institutional*' to ***'Urban Residential – Exception'***.

- That Policy I.4.1.2.3(e) be amended, as it applies to the subject lands, to permit a maximum **density of 170 units per gross hectare.**

- That the '*Urban Residential – Exception*' designation **permit a residential apartment building incorporating ground floor commercial and community-serving uses**, including the Bala Legion and a medical clinic.

The Amendment is shown on the attached Schedule "A".

2.3 IMPLEMENTATION

This Amendment shall be implemented in accordance with the implementation policies of the Township of Muskoka Lakes Official Plan and the District Municipality of Muskoka Official Plan.

2.4 INTERPRETATION

The provisions of the Official Plan, as amended from time to time, shall apply to this Amendment. This Amendment shall be interpreted in accordance with the interpretation policies of the Township of Muskoka Lakes Official Plan.



SUBJECT LANDS

LANDS TO BE RE-DESIGNATED FROM INSTITUTIONAL TO URBAN RESIDENTIAL - EXCEPTION

SCHEDULE "A"

TO OFFICIAL PLAN AMENDMENT NO._____
TO THE OFFICIAL PLAN OF MUSKOKA LAKES

1021 MAPLE AVENUE
TOWNSHIP OF MUSKOKA LAKES
DISTRICT MUNICIPALITY OF MUSKOKA

- MIXED USE
- URBAN RESIDENTIAL
- OPEN SPACE
- INSTITUTIONAL
- RESORT COMMERCIAL
- CORE COMMERCIAL
- HIGHWAY COMMERCIAL
- INDUSTRIAL
- ENVIRONMENTAL PROTECTION AREA

Appendix C – Draft Zoning By-law Amendment & Schedule

THE CORPORATION OF THE TOWNSHIP OF MUSKOKA LAKES
BY-LAW NO. _____-2026

Being a By-law to amend Zoning By-law No. 2014-14, as amended, for lands zoned Institutional (I) – Exception (87-1781).

WHEREAS Section 34 of the Planning Act, R.S.O. 1990, c. P.13, as amended, authorizes the Council of a municipality to pass zoning by-laws and amendments thereto;

AND WHEREAS the Council of The Corporation of the Township of Muskoka Lakes deems it advisable to amend Zoning By-law No. 2014-14, as amended;

NOW THEREFORE the Council of The Corporation of the Township of Muskoka Lakes enacts as follows:

1.0 ZONING AMENDMENT

THAT the Schedule(s) to Zoning By-law No. 2014-14, as amended, are hereby further amended by rezoning the lands from the ***Institutional (I) – Exception (87-1781) Zone*** to the ***Multiple Residential High Density – Exception (RM2-XX) – Sewer and Water Zone.***

THAT the lands subject to this By-law are shown on Schedule "B" attached hereto and forming part of this By-law.

2.0 EXCEPTION PROVISIONS

THAT Section 12.0 – Exceptions of Zoning By-law No. 2014-14, as amended, is hereby further amended by adding the following subsection:

Section 12.XX – Exception (RM2-XX)

Notwithstanding any provisions of this By-law to the contrary, the following shall apply to the lands zoned RM2-XX.

a) Zone Category and Context:
The RM2-XX Zone shall be considered within the Community Residential Zone category and located within an Urban Centres designation.

b) Permitted Uses:

- Residential apartment dwellings;
- Ground floor commercial and community-serving uses, including a Legion Hall (Bala Legion) and a medical clinic.

c) Zone Provisions:

- Maximum Lot Coverage: 45%
- Maximum Building Height: 22 metres
- Maximum Building Height (Storeys): 4 storeys
- Minimum Landscaped Open Space: 25%
- Maximum Density: 170 units per hectare
- Minimum Parking Requirement: 0.4 parking spaces per dwelling unit

d) Parking Provisions:

Notwithstanding Section 5.0 of this By-law:

- Parking may be provided on-site and/or off-site;
- Off-site parking may be located on private lands or within shared or public parking areas, subject to appropriate agreements with the Township;
- Barrier-free parking spaces shall be accommodated within the total number of required parking spaces.

3.0 GENERAL PROVISIONS

THAT all other applicable provisions of Zoning By-law No. 2014-14, as amended, shall apply to the lands subject to this By-law.

4.0 EFFECTIVE DATE

THAT this By-law shall come into force and take effect on the date of its passing, subject to the provisions of Sections 34(30) and 34(31) of the Planning Act, R.S.O. 1990, as amended.

READ and PASSED this _____ day of _____ 2026.

THE CORPORATION OF THE TOWNSHIP OF MUSKOKA LAKES

_____ Mayor

_____ Clerk



SUBJECT LANDS

LANDS TO BE REZONED FROM INSTITUTIONAL (I) - EXEMPTION (87-1781) TO MULTIPLE RESIDENTIAL HIGH DENSITY - EXCEPTION (RM2-XX) - SEWER AND WATER

SCHEDULE "B"

TO ZONING BY-LAW NO._____

1021 MAPLE AVENUE
TOWNSHIP OF MUSKOKA LAKES
DISTRICT MUNICIPALITY OF MUSKOKA

COMMUNITY COMMERCIAL (C)

COMMUNITY RESIDENTIAL (R)

INSTITUTIONAL (I)

OPEN SPACE (OS)

THIS IS SCHEDULE 'A' TO THE ZONING BY-LAW AMENDMENT NO._____PASSED THIS _____DAY OF _____, 2026.

MAYOR _____

CLERK _____

Appendix D – Site Photos of Subject Lands

Image 1: View of Subject Site from Maple Avenue



Image 2: View of Subject Site from Interior Side Yard – West (Arena Side)



Image 3: View of the Subject Site – Internal Lands Facing the Rear Yard Lot Line



Image 4: View of the Subject Site – Existing Building from the Rear



Image 5: View of Site Access (Left) and Maple Avenue



Appendix E – 2017 Planning Act Approval

TOWNSHIP OF
MUSKOKA
Lakes

NOTICE OF THE PASSING
OF ZONING BY-LAW # 2017-104
BY THE CORPORATION OF THE TOWNSHIP OF MUSKOKA LAKES

TAKE NOTICE that The Council of the Corporation of the Township of Muskoka Lakes passed By-law **# 2017-104** on the **13th** day of **October 2017** under section 34 of the *Planning Act, R.S.O. 1990, c. P. 13, as amended.*

AND TAKE NOTICE that any person or agency may appeal to the Ontario Municipal Board in respect to the By-law **# 2017-104** by filing with the Clerk of The Corporation of the Township of Muskoka Lakes, not later than 4:00 p.m. on the **13th** day of **November 2017**, a notice of appeal setting out the objection to the By-law **# 2017-104** and the reasons in support of the objection. The Notice of Appeal must be made by using an "Appellant Form." If you wish to obtain a copy of the "Appellant Form," it is available from the Ontario Municipal Board website at www.omb.gov.on.ca. The form is also available by contacting the Township of Muskoka Lakes, Planning Department. The appeal must be accompanied by a certified cheque(s) or money order(s) made payable to the Minister of Finance in the amount of $300.00. PLEASE NOTE THAT ONLY INDIVIDUALS, CORPORATIONS, AND PUBLIC BODIES MAY APPEAL A ZONING BY-LAW TO THE ONTARIO MUNICIPAL BOARD. A NOTICE OF APPEAL MAY NOT BE FILED BY AN UNINCORPORATED ASSOCIATION OR GROUP. HOWEVER, A NOTICE OF APPEAL MAY BE FILED IN THE NAME OF AN INDIVIDUAL WHO IS A MEMBER OF THE ASSOCIATION OR THE GROUP ON ITS BEHALF.

No person or public body shall be added as a party to the hearing of the appeal unless, before the by-law was passed, the person or public body made oral submission at a public meeting or written submission to Council or, in the opinion of the Ontario Municipal Board, there are reasonable grounds to add the person or public body as a party.

An explanation of the purpose and effect of By-law **# 2017-104** describing the lands affected and a key map showing the location of the lands affected (or, alternatively, an explanation as to why a key map is not provided) are attached. A complete copy of By-law **# 2017-104** is available for inspection in the Planning Department during regular office hours. All inquiries should be directed to the **Planning Department**:

Township of Muskoka Lakes
1 Bailey Street
P.O. Box 129
Port Carling, Ontario
P0B 1J0
Tel (705) 765-3156
Fax (705) 765-6755
Email planning@muskokalakes.ca

DATED at The Corporation of the Township of Muskoka Lakes this **23rd** day of **October 2017**.

Cheryl Mortimer, Clerk, The Corporation of the Township of Muskoka Lakes

EXPLANATION OF THE PURPOSE AND EFFECT OF

ZONING BY-LAW AMENDMENT

ZBA-42/17, BY-LAW 2017-104, THE ROYAL CANADIAN LEGION, ROLL # 7-10-050

The lands affected by this amendment are described as Concession B, Part Lot 14, (Former Town of Bala), more specifically described as Plan 19, Lot 98, Part Lot 79 to 82, Part of Part Lot 84, and Part Lots 99 to Part of 101, now in the Township of Muskoka Lakes. The lands are presently in the ownership of The Royal Canadian Legion and known municipally as 1011 Maple Avenue, in the Town of Bala.

A one-storey building is presently located on the property and is occupied by The Royal Canadian Legion (Branch 424). The property is zoned Institutional (I).

The applicant proposes to construct a four storey retirement home with a gross floor area of 133,342 square feet attached to the existing Legion building. The retirement home will contain 128 units and include communal facilities such as a dining room, fitness studio, theatre, laundry, common areas, etc., and administration and support staff space is also to be provided. A portion of the existing building will be used as a medical clinic and the other portion a new Legion bar.

The purpose of this by-law is to provide an exemption to Section 7.1.2 of By-law 2014-14, as amended, being a minimum interior side yard setback of 15 feet. The applicant proposes to construct a covered parking structure partially below grade with an interior side yard setback of 8.8 feet.

The purpose of this by-law is also to provide an exemption to Section 7.1.2 of By-law 2014-14, as amended, being the maximum permitted height of 40 feet. The applicant proposes to construct a retirement home 78.3 feet in height.

The purpose of this by-law is also to provide an exemption to Section 7.1.2 of By-law 2014-14, as amended, being the maximum permitted lot coverage of 30%. The applicant proposes to construct a retirement home attached to the existing building resulting in a lot coverage of 42.2%.

The purpose of this by-law is also to provide an exemption to Section 3.29 of By-law 2014-14, as amended, being the minimum number of loading spaces. The applicant proposes to provide one loading space, whereas 14 loading spaces are required.

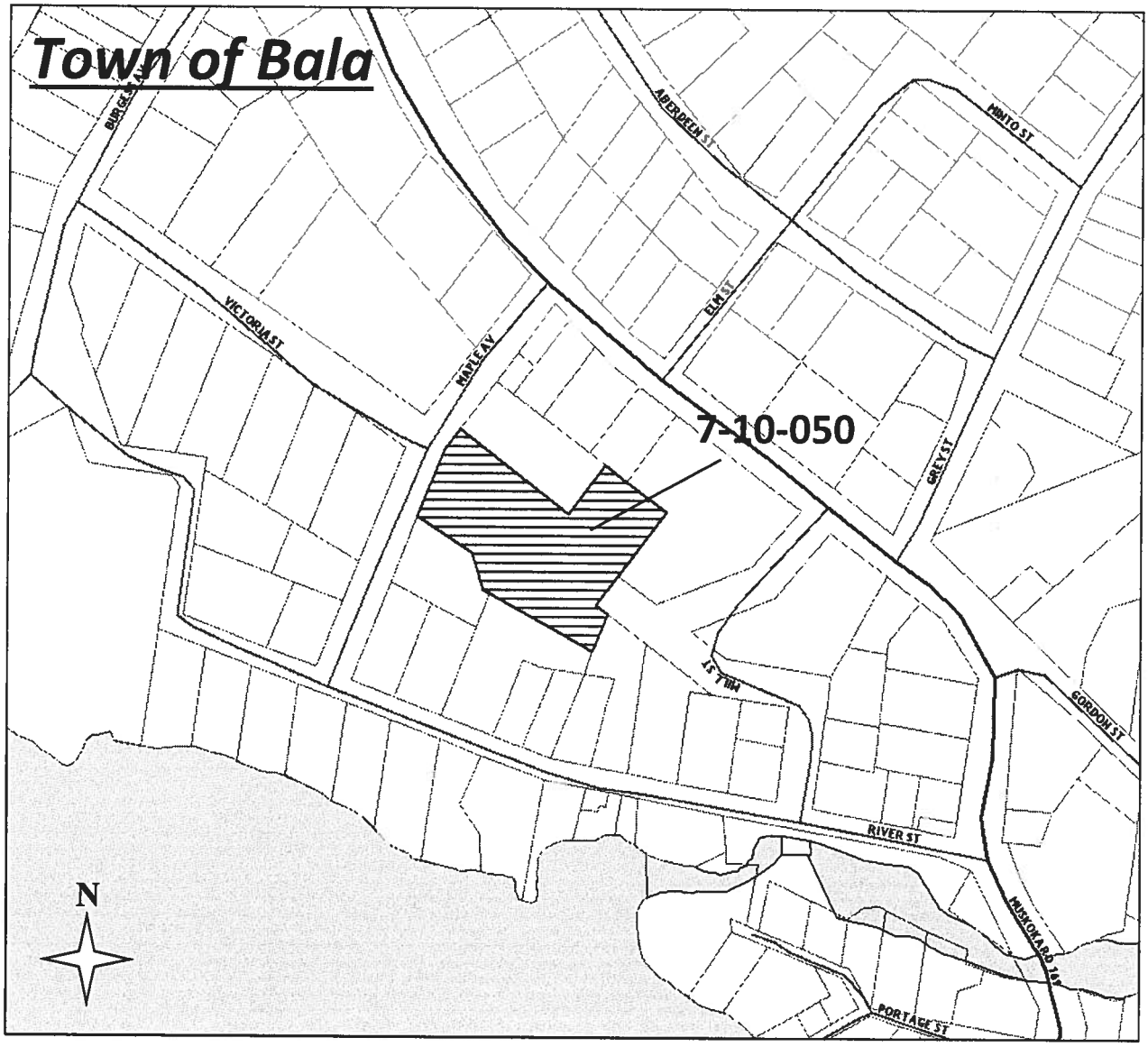
Please be advised that Council amended the By-law prior to third reading to reduce the building height to 55 feet, to increase the maximum lot coverage to 67%, and to rezone the subject lands from Institutional (I) to Institutional – Holding. The Holding (-H) symbol will remain in place until a development agreement with the District Municipality of Muskoka has been entered into with respect to the capacity and provision of municipal services, and the implementation of the recommendations from a satisfactory traffic study regarding Muskoka Road 169, and demonstrating the property is one contiguous

parcel.

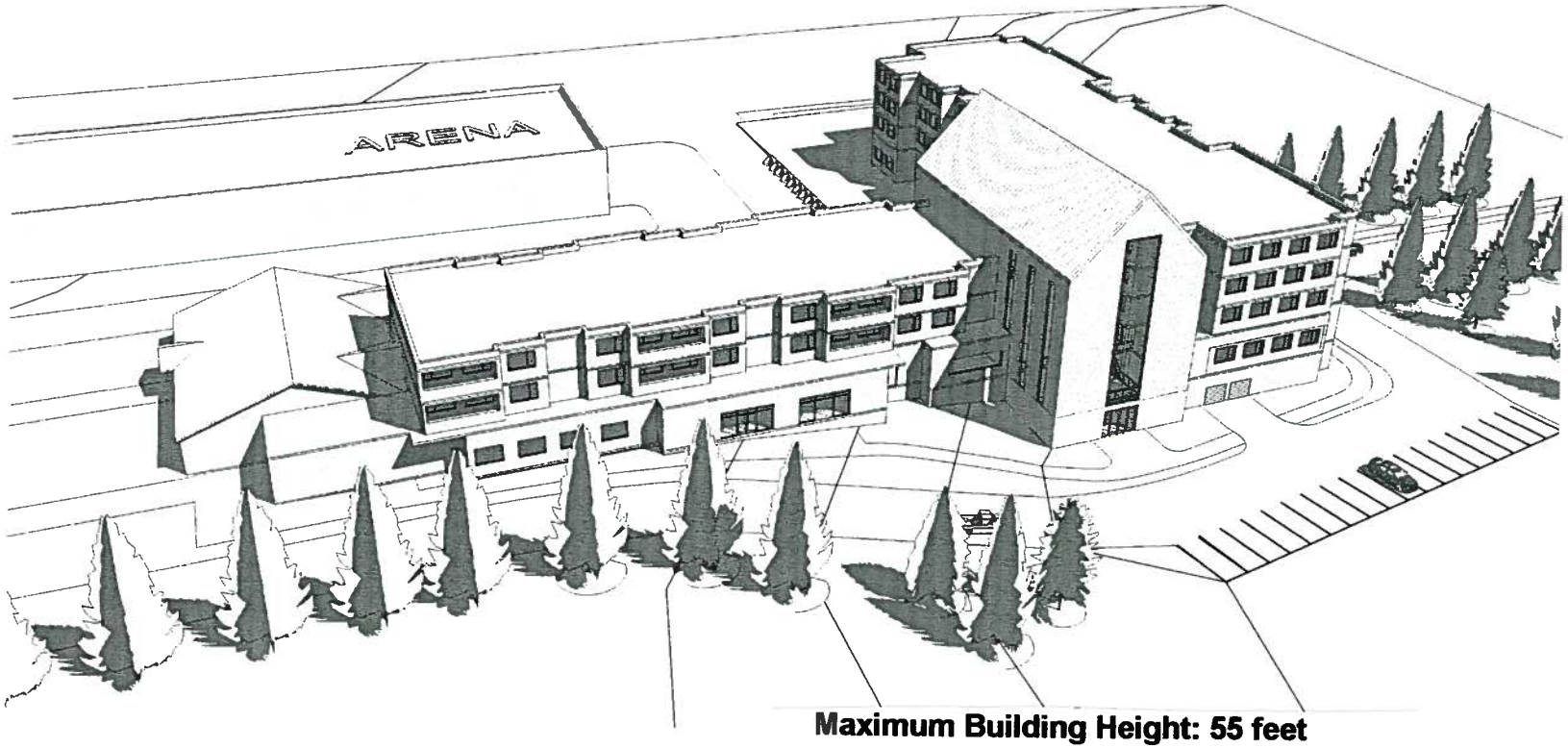
This by-law will have the effect of permitting a covered parking structure partially below grade with an 8.8 foot interior side yard setback, permitting a retirement home 55 feet in height, permitting a maximum lot coverage of 67%, requiring a minimum of one loading space, and rezoning the lands from Institutional (I) to Institutional – Holding. The Holding (-H) symbol will remain in place until a development agreement with the District Municipality of Muskoka has been entered into with respect to the capacity and provision of municipal services, and the implementation of the recommendations from a satisfactory traffic study regarding Muskoka Road 169, and demonstrating the property is one contiguous parcel.

Effect of written and oral submissions: The height of the retirement home was reduced due to concerns raised by neighbouring residents.

KEY MAP



BALA LEGION HERITAGE MANOR



Maximum Building Height: 55 feet

1 3D AERIAL FROM SW
SCALE:

paradigm
architecture + design

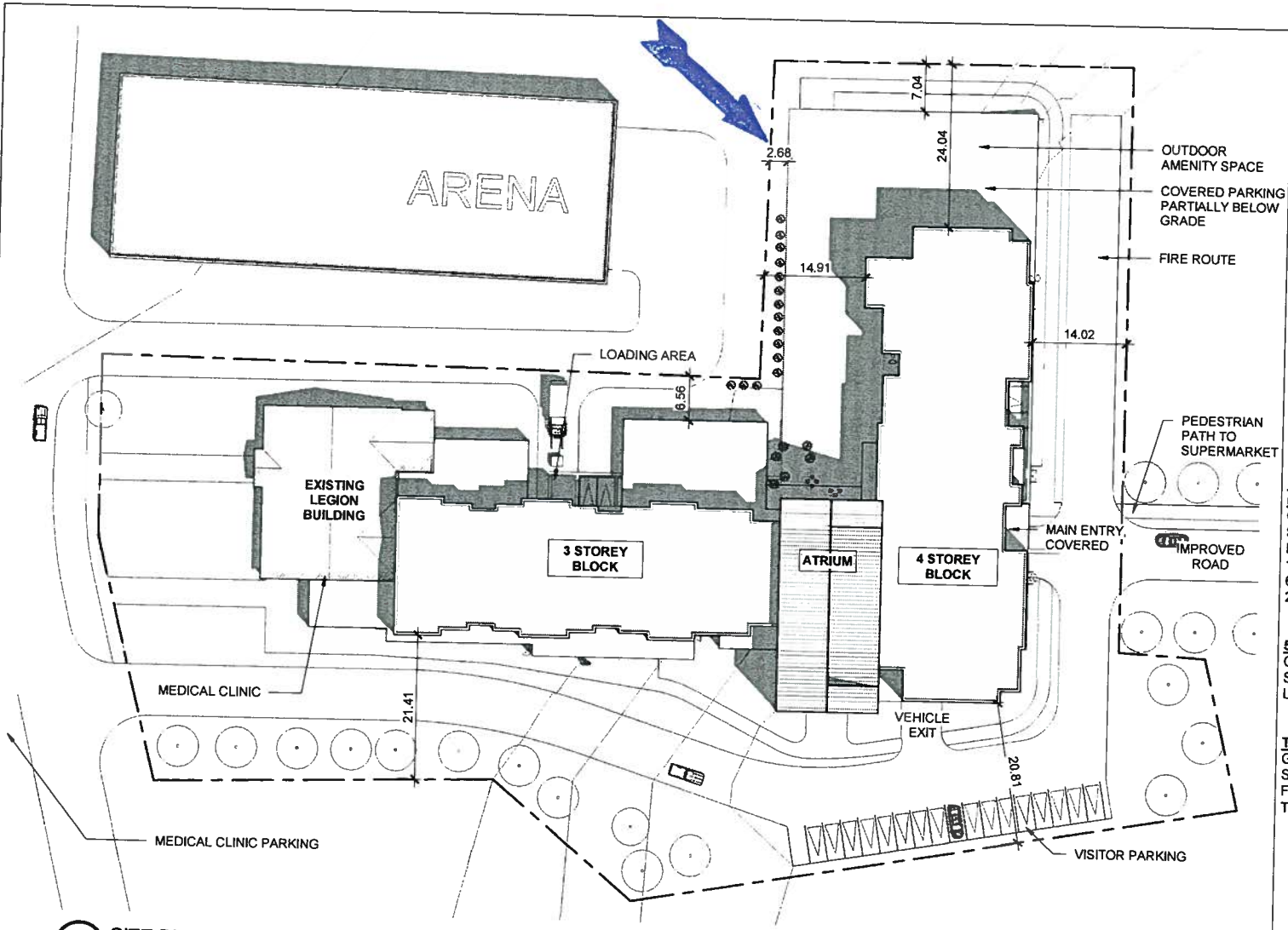
BALA LEGION HERITAGE MANOR
1011 Maple Ave, Bala, ON P0C 1A0

COVER PAGE
SCALE:

FOR INFORMATIONAL PURPOSES ONLY

PROJECT NO.: 729
DATE: 2017 06 12
REV. NO.:

A000



1 SITE PLAN
SCALE: 1 : 600

BALA LEGION HERITAGE MANOR

SITE INFORMATION:
LOT AREA: 139,250.50sf² (12,936.80m²)
BUILDING FOOTPRINT: 42,557sf² (3,953.67m²)
LOT COVERAGE: 30.5%

PARKING:
1 LEVEL OF PARKING BELOW GRADE (84 PARKING SPACES)
VISITORS PARKING AT GRADE (18 PARKING SPACES)
102 PARKING SPACES IN TOTAL

GROUND FLOOR LEVEL +/-37,200sf² (+/-3,455m²):
COMMON SPACE AREA: +/-32,500ft² (3,019m²)
SMALL STUDIO UNITS: 10 UNITS (+/-220sf²/UNIT)
LARGE STUDIO UNITS: 4 UNITS (+/- 250ft²/UNIT)

2ND FLOOR TO 4TH FLOOR LEVEL (+/-24,600sf² (2,285m²)/FLOOR:
COMMON SPACE AREA: +/- 14,566sf² (+/-1,353m²)
SMALL STUDIO UNITS: 10 UNITS/FLOOR (+/-220sf²/UNIT)
LARGE STUDIO UNITS: 10 UNITS/FLOOR (+/-250sf²/UNIT)
1 BEDROOM UNITS: 10 UNITS/FLOOR (430ft² TO 610sf²/UNIT)
2 BEDROOMS UNITS: 2 UNITS/FLOOR (640ft²/UNIT)

5TH FLOOR LEVEL (+/-15,400sf²):
COMMOM SPACE AREA: +/-5,351ft²
SMALL STUDIO UNITS: 10 UNITS (+/-220sf²)
LARGE STUDIO UNITS: 8 UNITS (+/-250sf²)

TOTAL NUMBER OF UNITS/FLOOR:
GROUND FLOOR: 14 UNITS
SECOND TO FOURTH FLOOR: 96 UNITS
FIFTH FLOOR: 18 UNITS
TOTAL NUMBER OF UNITS: 128 UNITS

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www.paradigmarch.com

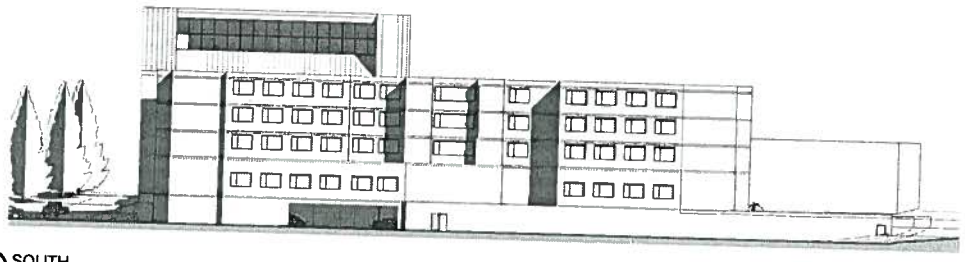
BALA LEGION HERITAGE MANOR
1011 Maple Ave, Bala, ON P0C 1A0

SITE PLAN
SCALE: As indicated

FOR INFORMATIONAL PURPOSES ONLY

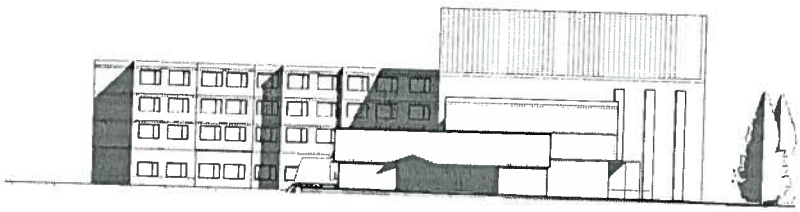
PROJECT NO.:729
DATE: 2017 06 12
REV. NO.:

A001



2 SOUTH
SCALE: 1 : 400

Maximum Building Height: 55 feet



1 NORTH
SCALE: 1 : 400

paradigm

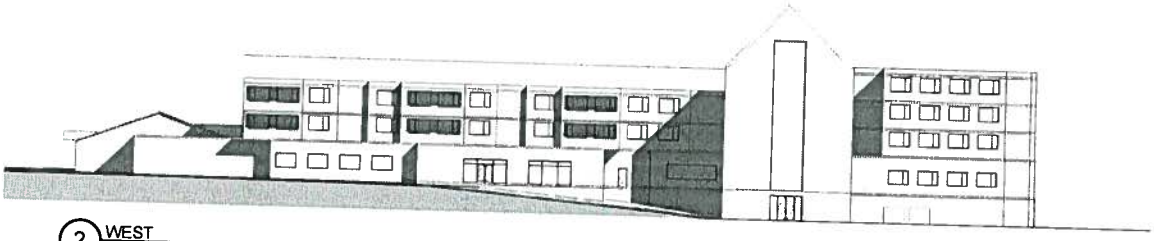
BALA LEGION HERITAGE MANOR
1011 Maple Ave, Bala, ON P0C 1A0

BUILDING ELEVATIONS
SCALE: 1 : 400

PROJECT NO.: 729
DATE: 08/28/17
REV. NO.:

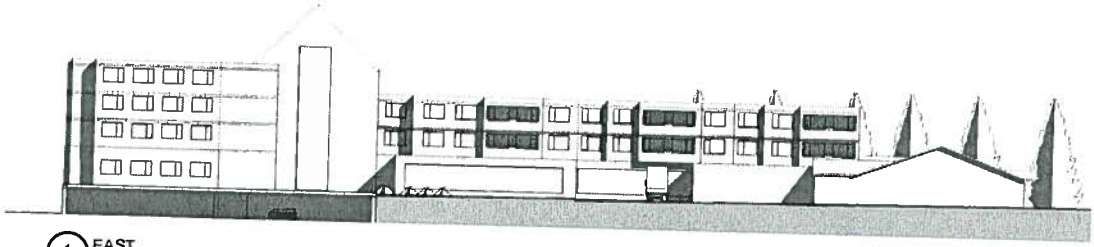
A200

FOR INFORMATIONAL PURPOSES ONLY



2 WEST
SCALE: 1 : 400

Maximum Building Height: 55 feet



1 EAST
SCALE: 1 : 400

paradigm

BALA LEGION HERITAGE MANOR
1011 Maple Ave, Bala, ON P0C 1A0

BUILDING ELEVATIONS
SCALE: 1 : 400

PROJECT NO.: 729
DATE: 08/28/17
REV. NO.:

A201

THE CORPORATION OF THE TOWNSHIP OF MUSKOKA LAKES

BY-LAW 2017-104

Being a By-law to amend Comprehensive Zoning By-law 2014-14, as amended, in the Township of Muskoka Lakes

---

WHEREAS the authority to pass this by-law is provided by Section 34 of the Planning Act, R.S.O. 1990, Chapter P.13 and amendments thereto;

AND WHEREAS By-law 2014-14 were enacted by the Corporation of the Township of Muskoka Lakes to regulate land use within the Municipality;

AND WHEREAS the Council of the Corporation of the Township of Muskoka Lakes deems it advisable to further amend By-law 2014-14;

NOW THEREFORE the Council of the Corporation of the Township of Muskoka Lakes enacts as follows:

1. Schedule 56 of By-law 2014-14, as amended, is hereby further amended by rezoning the lands described as Concession B, Part Lot 14, (Former Town of Bala), now in the Township of Muskoka Lakes, more specifically described as Plan 19, Lot 98, Part Lot 79 to 82, Part of Part Lot 84, and Part Lots 99 to Part of 101, from Institutional (I) to Institutional – Holding (I-H) as shown hatched on Schedule I to By-law 2017-104.

2. For the purposes of this By-law, no new buildings or structures shall be permitted on land identified with the 'Holding (-H)' symbol, until such time a further By-law is passed to remove the 'Holding (-H)' symbol in accordance with Section 36 of the Planning Act, R.S.O. 1990, as amended.

3. In this respect, Council shall only consider a By-law to remove the 'Holding (-H) symbol when Council is satisfied the following details are provided:

   i. That the lands be subject to a development agreement with the District Municipality of Muskoka respecting capacity and the provision of municipal services, and the implementation of satisfactory traffic study recommendations regarding Muskoka Road 169.

   ii. That it is satisfactorily demonstrated that the property is one contiguous parcel.

4. Section 12 of By-law 2014-14 is hereby further amended by the addition of the following subsection:

   87-1781

   i) The lands affected are described as Concession B, Part Lot 14, (Former Town of Bala), more specifically described as Plan 19, Lot 98, Part Lot 79 to 82, Part of Part Lot 84, and Part Lots 99 to Part of 101, now in the Township of Muskoka Lakes, as shown hatched on Schedule I to By-law 2017-104.

   ii) Despite the provisions of Section 7.1.2 of By-law 2014-14, as amended, for those lands described above, the maximum permitted lot coverage for a retirement home shall be 67%.

   iii) Despite the provisions of Section 7.1.2 of By-law 2014-14, as amended, for those lands described above, the minimum permitted interior side yard setback for a parking structure shall be 8 feet, as shown in the location and extent on Schedule II to By-law 2017-104.

iv) Despite the provisions of Section 7.1.2 of By-law 2014-14, as amended, for those lands described above, the maximum permitted height shall be 55 feet.

All other provisions of By-law 2014-14 apply.

5. Schedules I and II attached hereto are hereby made part of this By-law.

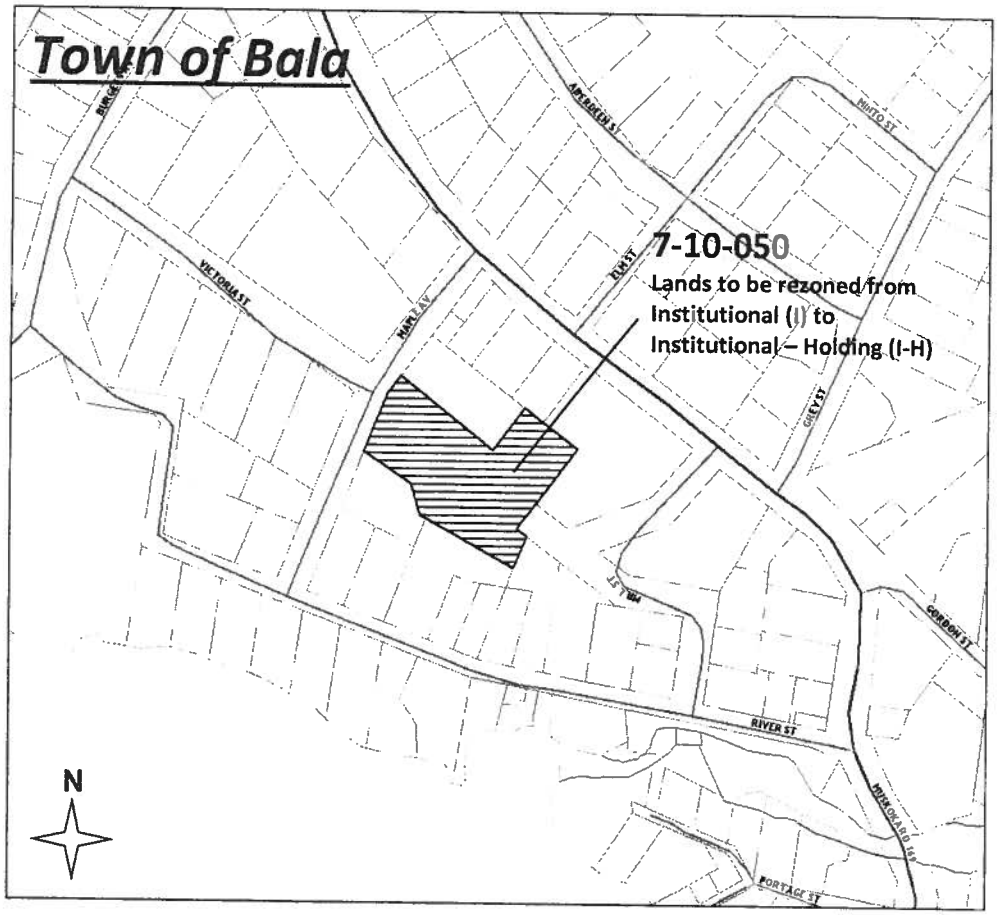
READ A FIRST AND SECOND TIME this 13th day of October, 2017.

READ A THIRD TIME AND FINALLY PASSED this 13th day of October, 2017.

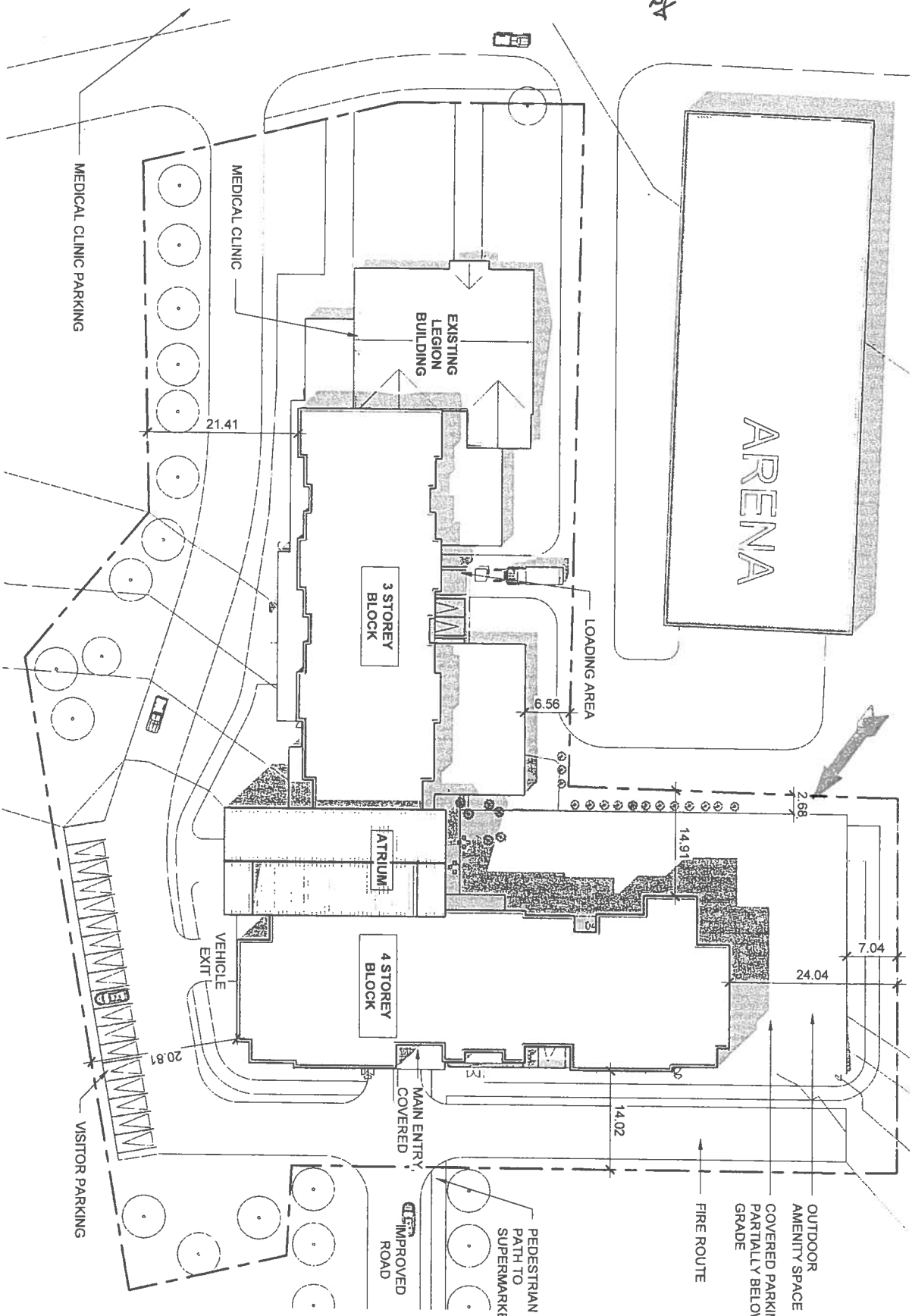
Mayor, Don Furniss

Cheryl Mortimer, Clerk

SCHEDULE I TO BY-LAW 2017-104



SCHEDULE II TO BY-LAW 2017-104



TATHAM ENGINEERING

Enhancing our communities



1011 Maple Avenue

TRANSPORTATION IMPACT BRIEF

Royal Canadian Legion (Branch 424)

File 426024 | April 23, 2026

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April 23, 2026

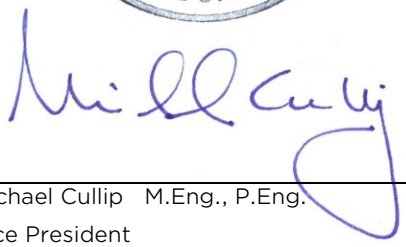
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Issue	Date	Description
1	April 23, 2026	Final Report

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1 Introduction

Tatham Engineering Limited was retained by the Royal Canadian Legion (Branch 424) to undertake a transportation review in support of the proposed new Legion and residential development to replace the existing Legion building at 1011 Maple Avenue in Bala, Township of Muskoka Lakes, District Municipality of Muskoka. The location of the site is illustrated in Figure 1.

1.1 REPORT OBJECTIVE

The objective of this report is to present the findings of the transportation review and address the requirements of the Township and District with respect to the potential transportation impacts of the development on the area road network. In particular, the following will be discussed:

- the operations of the study area road system prior to the proposed development;
- the growth in the traffic volumes not otherwise attributed to the proposed development (i.e. from overall growth in the area and/or other developments);
- the number of new trips the proposed development is likely to generate;
- the operations of the study area road system upon completion of the development; and
- the resulting impacts and need for mitigating measures (if required) to ensure acceptable overall road operations.

Recognizing that the trip generation of the development is not significant, a reduced-scope transportation impact brief is considered sufficient to review the potential impacts of this development, as per the guidelines identified in the District's *Engineering Guidelines*.

1.2 REPORT STRUCTURE

The report is structured as follows:

- Chapter 1: introduction and study purpose;
- Chapter 2: existing conditions, detailing the road system and corresponding traffic operations;
- Chapter 3: proposed development and associated details including land use, access, parking, and traffic volumes;
- Chapter 4: future conditions and corresponding traffic operations, considering background traffic growth and additional site-generated traffic; and
- Chapter 5: summary of the report and key findings.

2 Existing Conditions

This chapter will detail the current transportation network, traffic volumes, and traffic operations under existing conditions.

2.1 ROAD NETWORK

The road network to be addressed by this study consists of the following roads and intersections:

Roads

- Muskoka Road 169
- Maple Avenue
- River Street
- Mill Street

Intersections

- Muskoka Road 169 & Maple Avenue
- Muskoka Road 169 & River Street

Aerial mapping and photographs of the road system are provided in Figure 2 with additional details below.

2.1.1 Roads

Key details of the study area roads are summarized in Table 1. The functional classification is based on that presented in *Appendix G – Transportation and Scenic Corridors* of the *Township of Muskoka Lakes Official Plan*[1]. It is noted that the speed limit is unposted on all local roads, thus a 50 km/h speed limit has been assumed.

Table 1: Study Area Roads

ROAD	CLASSIFICATION	OWNER	LANES	SPEED LIMIT	DIRECTION
Muskoka Road 169	Class C Arterial	District	2	50 km/h	N-S/E-W[1]
Maple Avenue	Local	Township	2	50 km/h	N-S
River Street	Local	Township	2	50 km/h	E-W
Mill Street	Local	Township	2	50 km/h	N-S

[1] Within Bala, Muskoka Road 169 changes direction several times as it winds through the community. Overall, it traverses the Township in a northwest-southeast alignment.

[1] *Township of Muskoka Lakes Official Plan*. Township of Muskoka Lakes, November 2023.

2.1.2 Intersections

The configuration and control of each study area intersection is summarized in Table 2 and illustrated in Figure 3.

Table 2: Study Area Intersections

INTERSECTION	CONTROL	INTERSECTION APPROACH CONFIGURATION			
		NB	SB	EB	WB
Muskoka Road 169 & Maple Avenue	stop control (Maple Avenue)	LR	-	TR	LT
Muskoka Road 169 & River Street	stop control (River Street)	LT	TR	LR	-

L – left
T – thru
R – right

LT – left-through
TR – through-right
LR – left-right

LTR –left-through-right
ChR – channelized right

2.2 ACTIVE TRANSPORTATION NETWORK

Within the study area, there are paved (asphalt) boulevards provided along Muskoka Road 169 and Maple Avenue. A concrete sidewalk is provided along each side of Muskoka Road 169 from Gordon Street southwards to River Street. No other facilities are provided along the remaining study area roads.

2.3 TRANSIT NETWORK

There is currently no public transit service provided within Bala or the immediate area.

2.4 TRAFFIC VOLUMES

2.4.1 Traffic Counts

To determine existing traffic volumes, traffic count data was obtained for the intersections of Muskoka Road 169 with River Street and Grey Street. While the intersection of Muskoka Road 169 with Grey Street is not a study area intersection (i.e. it is not being assessed as part of this study), the data was obtained to inform through volumes on Muskoka Road 169 at Maple Street given their relatively close proximity to one another. The traffic counts were completed on August 15, 2024, during the following periods:

- 7:00 AM to 11:00 AM;
- 11:00 AM to 3:00 PM; and
- 3:00 PM to 7:00 PM.

Detailed count sheets are provided in Appendix A. Data was not available for the intersection of Muskoka Road 169 with Maple Avenue. As such, Tatham Engineering staff completed a PM traffic count at this intersection on April 16, 2026, from 3:30 PM to 5:00 PM. The weekday AM and PM peak hour volumes, as observed, are illustrated in Figure 4.

2.4.2 Adjustments

Maple Avenue

In the absence of traffic count data for the AM peak period at Maple Avenue, the AM peak hour turning volumes (i.e. traffic turning to/from Maple Avenue at Muskoka Road 169) were estimated based on the observed PM peak hour volumes. For the purposes of this study, it has been assumed that the AM peak hour volumes will mirror the PM peak hour volumes (e.g. westbound left turn in the PM peak is a northbound right turn in the AM peak). This is conservative in that the AM peak hour volumes as observed at the Grey Street and River Street intersections are less than those in the PM peak hour.

The through volumes along Muskoka Road 169 at Maple Avenue were established separately, as detailed below.

Seasonal Adjustment

Traffic volumes on most roads within the District are typically greatest during the summer months due to increased recreational and leisure travel. As the counts completed at Muskoka Road 169 and River Street were completed in August 2024, such are considered reflective of peak seasonal conditions.

The counts conducted at Muskoka Road 169 and Maple Avenue were not completed during the summer, thus an adjustment was considered at this intersection. The August 2024 volumes observed on Muskoka Road 169 at Grey Street (approximately 240 metres east of Maple Avenue) were compared to the April 2026 volumes observed on Muskoka Road 169 at Maple Avenue. As illustrated in Figure 4, the volumes at Grey Street are significantly higher than those observed at Maple Avenue. As such, the through volumes on Muskoka Road 169 observed at Grey Street were carried west through the intersection with Maple Avenue.

No adjustments were made to the turning volumes at Maple Avenue. At the time the counts at Maple Avenue were completed, River Street was temporarily closed between Maple Avenue and Muskoka Road 169. As such, it is expected that more traffic than normal was using Maple Avenue to divert around the closure, which, for the purpose of this study, is assumed to reflect summer-conditions.

2026 Base Year

To reflect a 2026 base year, the 2024 traffic volumes on Muskoka Road 169 were increased by 2% per annum (more details on background growth are provided in Section 4.2.1).

2.4.3 2026 Traffic Volumes

The resulting 2026 traffic volumes are illustrated in Figure 5, reflective of the traffic data gathered at each intersection plus the noted adjustments made to reflect summer 2026 conditions.

2.5 TRAFFIC OPERATIONS

The assessment of existing conditions provides the baseline from which the future traffic operations (both without and with the subject development) can be assessed. As the capacity, and hence operations, of a road system is effectively dictated by its intersections, the traffic assessment has focused on the operations of the study area intersections based on the following:

- the 2026 traffic volumes;
- the existing intersection configurations and controls; and
- procedures outlined in the 2000 *Highway Capacity Manual*[2] (using Synchro v.12 software).

The analysis considers the following metrics for each lane group at signalized intersections and for the critical movements at unsignalized intersections (namely the stop-controlled movements):

- average delay (measured in seconds);
- level of service (LOS); and
- volume to capacity (v/c) ratio.

Level of service definitions are provided in Appendix B; LOS A corresponds to the best operating condition with minimal delays whereas LOS F corresponds to poor operations resulting from high intersection delays. A v/c ratio of less than 1.0 indicates the intersection movement/approach is operating at less than capacity while v/c of 1.0 indicates capacity has been reached.

To more accurately model existing traffic conditions, the overall intersection peak hour factor (PHF) and heavy vehicle percentages for each movement were calculated based on the traffic counts and input into the traffic model. Where the observed heavy vehicle percentage was less than the Synchro default value (2%), the default was applied. The PHF is representative of the evenness of traffic flow over the course of the hour, a PHF closer to 1.00 (the maximum PHF)

[2] *2000 Highway Capacity Manual*. Transportation Research Board. Washington DC, 2000.

indicates more evenly distributed flow, whereas a PHF closer to 0.25 (the minimum PHF) indicates very uneven flow, resulting in worse operating conditions for a given volume of traffic.

Results of the operational assessment are summarized in Table 3 with detailed operations worksheets provided in Appendix C. Any movements operating at LOS F and/or with a volume to capacity ratio of 1.0 or greater have been bolded in the summary table.

As indicated, each intersection provides excellent operations during both peak periods, with the critical movement operating with delays of 11 to 13 seconds (LOS B) and substantial capacity remaining (v/c < 0.07). Should the actual summer volumes on Maple Avenue exceed those levels otherwise assumed, there is considerable reserve capacity within the intersection to accommodate such.

Table 3: Intersection Operations – 2026

INTERSECTION, MOVEMENTS & CONTROL			WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
			Delay	LOS	V/C	Delay	LOS	V/C
MR 169 & Maple Avenue	NB LR	stop	12	B	0.06	12	B	0.04
MR 169 & River Street	EB LR	stop	11	B	0.03	13	B	0.05

2.6 ROAD NETWORK IMPROVEMENTS

Based on the results of the operational analyses conducted under existing conditions, no improvements are required to accommodate the existing traffic volumes.



3 Proposed Development

This chapter will provide additional details with respect to the proposed development including its location, land-use, site access, parking provision, anticipated trip generation and the assignment of site trips to the adjacent road network.

3.1 LOCATION

The site is located at 1011 Maple Avenue, in the community of Bala, Township of Muskoka Lakes, as illustrated Figure 1.

3.2 LAND USE

3.2.1 Existing

The site is currently occupied by the Royal Canadian Legion's Bala branch (Branch 424), an approximately 600 m^2 (6,500 ft^2) building containing spaces for community use (hall, kitchen, etc.).

3.2.2 Proposed

The proposed development will see the demolition of the existing Legion building and replacement with a new 4-storey apartment building. The new building will contain a total of 128 rental apartment units of which approximately 33% will be designated affordable housing units. In addition to the residential uses, approximately 834 m^2 (9,000 ft^2) of ground-floor space will be provided to maintain the Legion branch, consisting of community-use spaces and a small medical clinic (75 m^2, 800 ft^2).

A site plan illustrating the proposed development is provided in Figure 6.

3.3 SITE ACCESS

Access to the site will be provided via connections to Maple Avenue and Mill Street. The site will be served by a total of 3 access points, as illustrated in Figure 6. The location of each access is measured from centre of access to centre of the noted intersecting road.

- Access 1 – located on Maple Avenue, approximately 100 metres south of Muskoka Road 169;
- Access 2 – located on Maple Avenue, approximately 145 metres south of Muskoka Road 169; and
- Access 3 – located on Mill Street, approximately 100 metres south of Muskoka Road 169.

Access 1 and 2 will each have a width of 4.0 metres, providing one-way operations, with Access 2 accommodating inbound traffic and Access 1 accommodating outbound traffic. Access 3 will have a width of 6.0 metres and will provide two-way operations.

3.3.1 Sight Lines

The sight lines along Maple Avenue and Mill Street at the proposed site access points have been reviewed in context of industry standards. The sight line assessment has considered minimum stopping sight distance, as per the TAC *Geometric Design Guide for Canadian Roads*, which is defined as sufficient distance for an approaching motorist to observe a hazard in the road and bring their vehicle to a complete stop prior to the hazard.

For a design speed of 60 km/h, (reflective of the assumed 50 km/h speed limit on each road), a minimum stopping sight distance of 85 metres is required. The available sight lines along each road at the proposed access locations are illustrated in Figure 7 and are summarized as follows:

- Access 1: >85 metres from the north and south;
- Access 2: > 85 metres from the north and south; and
- Access 3: > 85 metres from the north; 55 metres from the east.

As indicated, sight lines along Maple Avenue exceed the noted TAC requirements for stopping sight distance at Access 1 and 2. For Mill Street, the sight line towards Access 3 from the north is sufficient, whereas that from the east is insufficient for the assumed design speed of 60 km/h. This is not expected to be problematic, however, as the alignment of Mill Street near the access requires slower travel speeds to navigate safely. Per TAC requirements, the 55 metre sight distance available is suitable for a design speed of approximately 40 km/h. Based on aerial measurements, the existing horizontal curves on Mill Street each have a centreline radius of less than 25 metres, which translates to a design speed of less than 30 km/h. Therefore, the existing curves will govern travel speeds near the access, thus mitigating the restricted sight lines from the east.

3.4 PARKING & LOADING

3.4.1 Parking

The parking requirements and proposed supply are discussed in the *1011 Maple Avenue Parking Justification Study*[3], provided under separate cover.

[3] *1011 Maple Avenue Parking Justification Study* – Tatham Engineering Limited, April 2026.

3.4.2 Loading Spaces

The loading requirements for the site have been reviewed in context of the Township's *Zoning By-law*[4] for the commercial ground floor use. Where loading and unloading activities are expected, the by-law requires that a development having a gross floor area between 279 m^2 and 1,000 m^2 (3,000 ft^2 to 10,764 ft^2) provide 1 loading space. As per the site plan, 1 loading space will be provided, satisfying this requirement.

3.5 SITE TRAFFIC

3.5.1 Trip Generation

The number of vehicle trips to be generated by the proposed development for the weekday AM and weekday PM peak hours has been determined based on type of use, development size and trip generation rates per the *ITE Trip Generation Manual, 12th Edition*[5].

- Based on the type of and nature of the development proposed for the site, the *multi-family housing, mid-rise* land use has been applied (ITE land-use code 221) for the apartment uses.
- Trip generation associated with the Legion has not been specifically considered in this study, as such represents an existing condition on the road network. Furthermore, Legion events are typically held outside of typical commuter peak periods (i.e. in the evening, on weekends), thus day-to-day operations are not likely to generate a meaningful amount of traffic during the peak periods considered in this study. While is it acknowledged that the floor area of the Legion facility will increase from 600 to 834 m^2, such is not expected to have a significant bearing on the associated visitor and hence traffic levels (the typical clientele base during typical weekday operations will likely remain consistent).
- With respect to the proposed medical clinic within the Legion space, trip rates for a walk-in clinic have been assumed, (ITE land-use code 630).

The trip rates and corresponding trip estimates for the proposed development are summarized in Table 4. As indicated, the site is expected to generate approximately 50 trips during each of the weekday AM and the weekday PM peak hours.

[4] *Comprehensive Zoning By-law 2014-14*. Township of Muskoka Lakes, consolidated February 2023.
[5] *Trip Generation Manual – 12th Edition*. Institute of Transportation Engineers, August 2025.

Table 4: Trip Rates & Estimates – 1011 Maple Avenue

LAND USE	VARIABLE	WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
		In	Out	Total	In	Out	Total
multifamily mid-rise (ITE 221)	per unit	0.09	0.29	0.38	0.24	0.14	0.38
	128 units	11	38	49	31	18	49
medical clinic (ITE 620)	per 1000 ft^2	2.23	0.52	2.75	1.06	2.61	3.67
	800 ft^2	2	0	2	1	2	3
Total Trips		**13**	**38**	**51**	**32**	**20**	**52**

3.5.2 Trip Distribution & Assignment

Trip Distribution

The distribution of trips to/from the site was determined based on the type of development proposed, existing travel patterns observed in the traffic counts, and the location of the proposed development in relation to existing built-up areas. Considering the factors detailed above, the following distribution was applied to the site-generated traffic:

- 30% – to/from the north via Maple Avenue to Muskoka Road 169;
- 60% – to/from the south via River Street to Muskoka Road 169; and
- 10% – to/from the east via Maple Avenue to Muskoka Road 169 (reflective of in-town trips).

Trip Assignment

For the purposes of this study, it is assumed that all traffic will reach Muskoka Road 169 via Maple Avenue or River Street, as these represent the busiest travel corridors in the study area. Any traffic which ultimately travels to/from Muskoka Road 169 via Mill Street directly will have a nominal impact on the operations of that intersection and result in somewhat improved operations at the study area intersections.

The assignment of site-generated traffic, based on the distribution and assumptions noted above, is illustrated in Figure 8.

4 Future Conditions

This chapter will address future conditions on the study area road network. The following areas will be addressed:

- planned road network improvements;
- future traffic volumes;
- operations of the study area intersections; and
- potential improvements to the study area road network, if necessary.

4.1 ROAD NETWORK

Based on available information, there are no road network, active transportation, or transit improvements planned within the study area at this time.

4.2 TRAFFIC VOLUMES

For the purposes of this study, a 4-year build-out and occupancy timeline (i.e. 2029) has been assumed for the proposed development. Based on this timeline, a future assessment horizon of 2034 has been considered (i.e. 5 years beyond build-out). Traffic volumes for this horizon have been established considering the following.

4.2.1 Background Growth

Historical Population Growth

As per recent census data, the population of the Township of Muskoka Lakes has grown from 6,707 persons in 2011 to 7,652 persons in 2021, translating to growth of approximately 1.3% per annum. Over the same period, the District overall has grown from 58,017 persons to 66,674 persons, representing growth of approximately 1.4% per annum.

Projected Growth

As per the District's *Growth Strategy*[6], the District's population is forecast to grow to approximately 99,100 persons by 2051, reflecting a growth rate of approximately 1.3% per annum based on the 2021 census population. The report notes that the population in Muskoka Lakes is forecast to reach 10,700 persons by 2051, resulting in a somewhat lower growth rate of approximately 1.1% per annum based on the 2021 census population.

[6] *District of Muskoka Growth Strategy – Final Report*. Watson & Associates Economists Ltd. November 2024.

Employment forecasts were also presented in the *Growth Strategy*. By 2051, the District is expected to have 41,300 jobs, an increase of 12,700 jobs from 2021 reflecting an increase of 1.2% per annum. The Township is expected to have 4,570 jobs by 2051, an increase of 1,200 jobs from 2021 reflecting an increase of 1.0% per annum.

Background Growth Rate

In considering the noted census and growth planning data, a background growth rate of 2.0% per annum has been considered on Muskoka Road 169. This rate is in excess of the growth forecasts of the Township and wider District, and thus represents a conservative estimate of future traffic volumes. No growth has been applied to the volumes on the remaining roads, as each serves a local purpose and is thus not subject to year over year growth.

4.2.2 Background Development

A review of development activity in Bala presented in the District's *PlanHub Dashboard*[7] did not indicate any major developments in Bala which should be considered independently in this study.

4.2.3 Future Traffic Volumes

The resulting future traffic volumes are illustrated as follows:

- Figure 9 – 2034 Background Traffic Volumes; and
- Figure 10 – 2034 Total Traffic Volumes.

The 2034 background traffic volumes illustrated in Figure 9 are reflective of the 2026 traffic volumes adjusted to reflect the 2% background growth applied to Muskoka Road 169.

The 2034 total traffic volumes illustrated in Figure 10 are reflective of the 2034 background volumes plus the additional traffic to be generated by the proposed redevelopment (as per Figure 8).

4.3 TRAFFIC OPERATIONS

Operations of the study area intersections were reviewed for the 2034 horizon, considering the background conditions (i.e. without the proposed development) and the total conditions (i.e. with the proposed development), such that the impacts of the development can be identified. A summary of each operational assessment is provided below, with detailed operations worksheets provided in Appendix D.

[7] *https://map.muskoka.on.ca/*

4.3.1 Future Background Conditions

Operations under future background conditions are summarized in Table 5. As indicated, each intersection provides excellent operations during both peak periods, with the critical movement operating with delays of 11 to 14 seconds (LOS B) and substantial capacity remaining (v/c < 0.08). Compared to existing conditions, operations throughout the study area remain acceptable, with nominal increases to movement delays (0 to 2 seconds) and utilized capacity (0.00 to 0.01).

Table 5: Intersection Operations – 2034 Background

INTERSECTION, MOVEMENTS & CONTROL			WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
			Delay	LOS	V/C	Delay	LOS	V/C
MR 169 & Maple Avenue	NB LR	stop	13	B	0.07	14	B	0.04
MR 169 & River Street	EB LR	stop	11	B	0.03	14	B	0.06

4.3.2 Future Total Conditions

Operations under future total conditions are summarized in Table 6. As indicated, each intersection provides good operations during both peak periods, with the critical movement operating with delays of 12 to 16 seconds (LOS B to C) and substantial capacity remaining (v/c < 0.12). Compared to background conditions, operations throughout the study area remain acceptable under total conditions, with nominal increases to movement delays (0 to 2 seconds) and utilized capacity (0.02 to 0.04). Should more site traffic use Maple Avenue than assumed above (i.e. more than 40%), no operational concerns will be realized; results of a sensitivity assessment, in which all site traffic was assigned through Maple Avenue, nominally improved delays at the intersection due to the increased proportion of right-turning traffic and had no impact on the utilized capacity.

Table 6: Intersection Operations – 2034 Total

INTERSECTION, MOVEMENTS & CONTROL			WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
			Delay	LOS	V/C	Delay	LOS	V/C
MR 169 & Maple Avenue	NB LR	stop	14	B	0.11	16	C	0.07
MR 169 & River Street	EB LR	stop	12	B	0.06	14	B	0.08

4.4 ROAD NETWORK IMPROVEMENTS

4.4.1 Intersection Operations

Based on the results of the operational analyses under future conditions, no improvements are required to accommodate the future traffic volumes, both without and with the additional traffic generated by the proposed development.

4.4.2 Turn Lane Requirements

Given the increase in turning volumes at Maple Avenue and River Street resulting from the proposed development, the need for dedicated turn lanes on Muskoka Road 169 at each intersection was reviewed. The turn lane review has considered the following:

- the 2034 total traffic volumes;
- MTO guidelines[8] for auxiliary turn lanes at unsignalized intersections; and
- a design speed of 60 km/h.

Left Turn Lanes

In considering the need for an exclusive eastbound left turn lane, MTO warrants for auxiliary left turn lanes on 2-lane, undivided highways were considered. The warrants are based on:

- design speed (assumed to be 60 km/h based on the 50 km/h speed limit);
- advancing volume (traffic travelling in the same direction as the left-turning traffic);
- opposing volume (traffic travelling in the opposite direction as the left-turning traffic); and
- percentage of left turns in the advancing volume.

The completed warrants are provided in Appendix E. Based on the projected traffic volumes and assumed design speed, a dedicated left turn lane is not required at either intersection.

Right Turn Lanes

With respect to right turn lanes, such are generally warranted where right turn volumes exceed 60 vehicles per hour and/or impede through traffic. Right turning volumes at each intersection are forecast to be fewer than 25 vehicles per hour and thus do not meet the 60 vehicle threshold. Similarly, no operational concerns are realized. Therefore, dedicated right turn lanes are not warranted at either intersection to accommodate the proposed development.

---

[8] *MTO Design Supplement for TAC Geometric Design Guide for Canadian Roads.* Ontario Ministry of Transportation Design Standards & Specifications Office. April 2020.



5 Summary

This study has addressed the transportation impacts associated with the proposed redevelopment of the existing Royal Canadian Legion branch in Bala (Branch 424).

Proposed Development

The proposed development consists of the demolition of the existing Legion building and replacement with a 128-unit rental apartment complex. Space will be provided within the new building to maintain the existing Legion branch complete with a small medical clinic. Upon completion, the development is expected to generate in the order of 50 new vehicle trips during the weekday AM and PM peak periods.

Transportation Impacts

In assessing the impact of the development on the adjacent road system, key intersections were analyzed under existing (2026) and future (2034) horizon periods.

Results of the operational analyses indicate that the intersections of Muskoka Road 169 with Maple Avenue and with River Road operate very well (LOS B) under existing conditions, with low delays (<15 seconds) and significant capacity remaining (v/c < 0.07).

Under future conditions, without the proposed development, the intersections will continue to operate very well (LOS B) with low delays (<15 seconds) and significant capacity remaining (v/c < 0.07). Following completion of the proposed development, performance of the intersections declines slightly, however, the intersections are expected to continue to operate well (LOS B to C) with low delays (<16 seconds) and significant capacity remaining (v/c < 0.12). Furthermore, even if all site traffic travels via one route instead of two (i.e. exclusively via Maple Avenue or River Street), sufficient capacity is available at each external intersection to accommodate the additional demand.

Overall, the proposed redevelopment of the Bala Legion will not have a significant impact on the operations of the adjacent road system.

Site Access & Sight Lines

Access to the site is proposed via two access points on Maple Avenue and one access point on Mill Street. Sight lines at each of these proposed access points were reviewed according to industry guidelines for minimum stopping sight distance. Based on this review, the sight lines at each access point were found to be sufficient.

Turn Lane Requirements

The need for dedicated left and right turn lanes on Muskoka Road 169 at Maple Avenue and River Street was reviewed. Based on this review, turn lanes are not required to support the proposed development.



1011 MAPLE AVENUE – TRANSPORTATION IMPACT BRIEF

Figure 1: Site Location



1011 MAPLE AVENUE – TRANSPORTATION IMPACT BRIEF

Figure 2: Study Roads



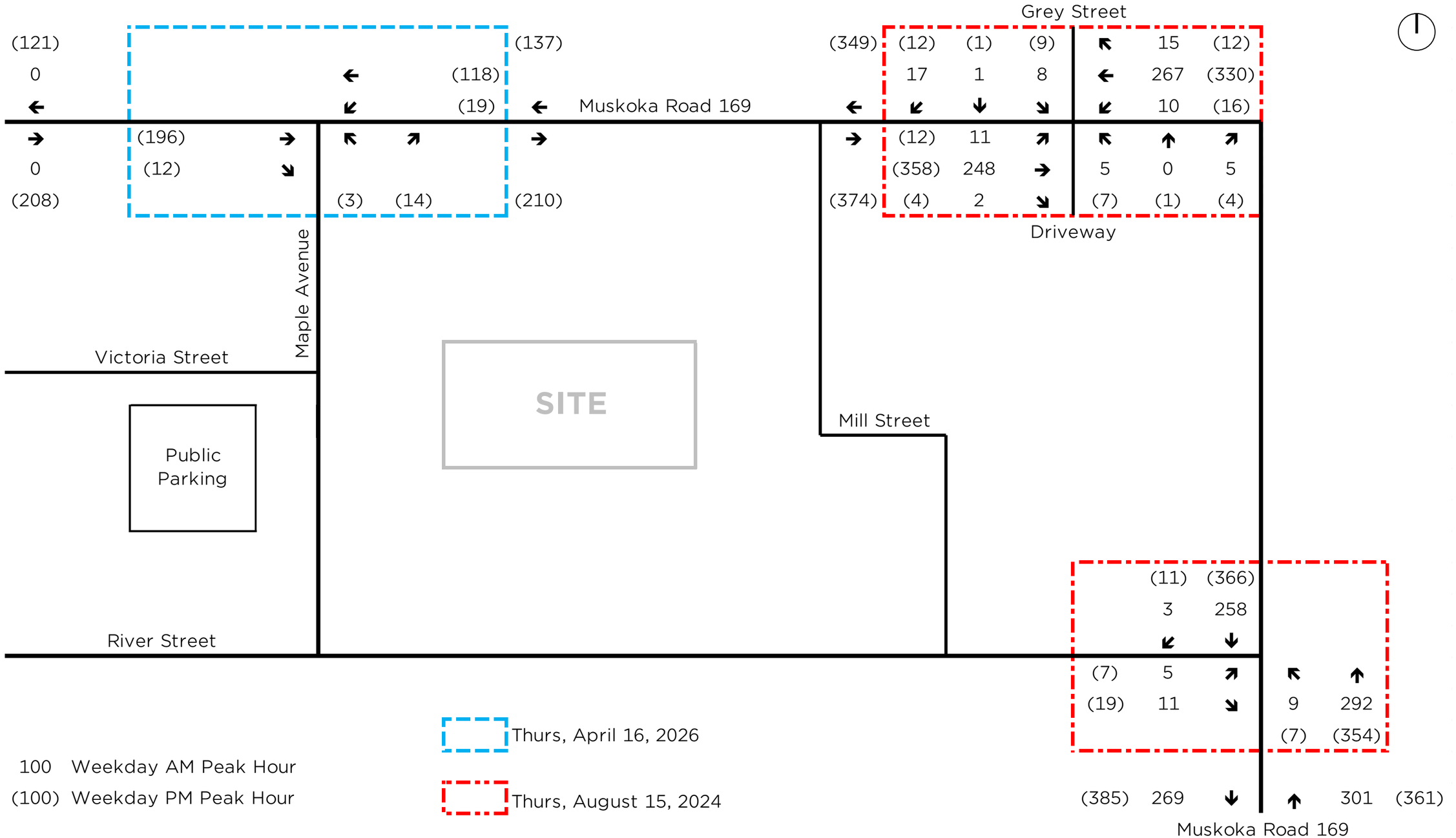
Intersection of Muskoka Road 169 with Maple Avenue



Source: Muskoka GeoHub

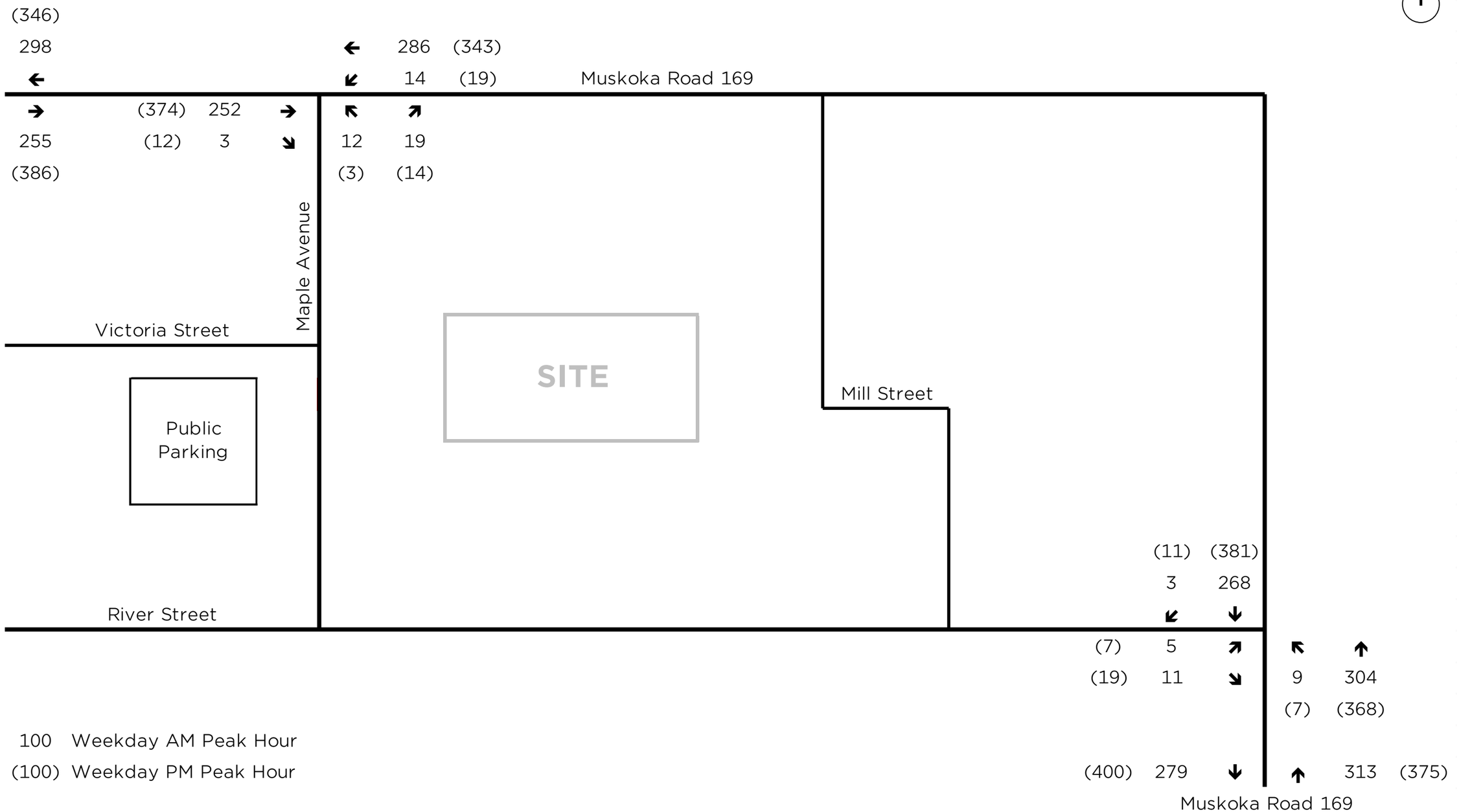
Intersection of Muskoka Road 169 with River Street

Figure 3: Study Intersections



1011 MAPLE AVENUE – TRANSPORTATION IMPACT BRIEF

Figure 4: Traffic Counts



1011 MAPLE AVENUE – TRANSPORTATION IMPACT BRIEF

Figure 5: Traffic Volumes – 2026 Existing

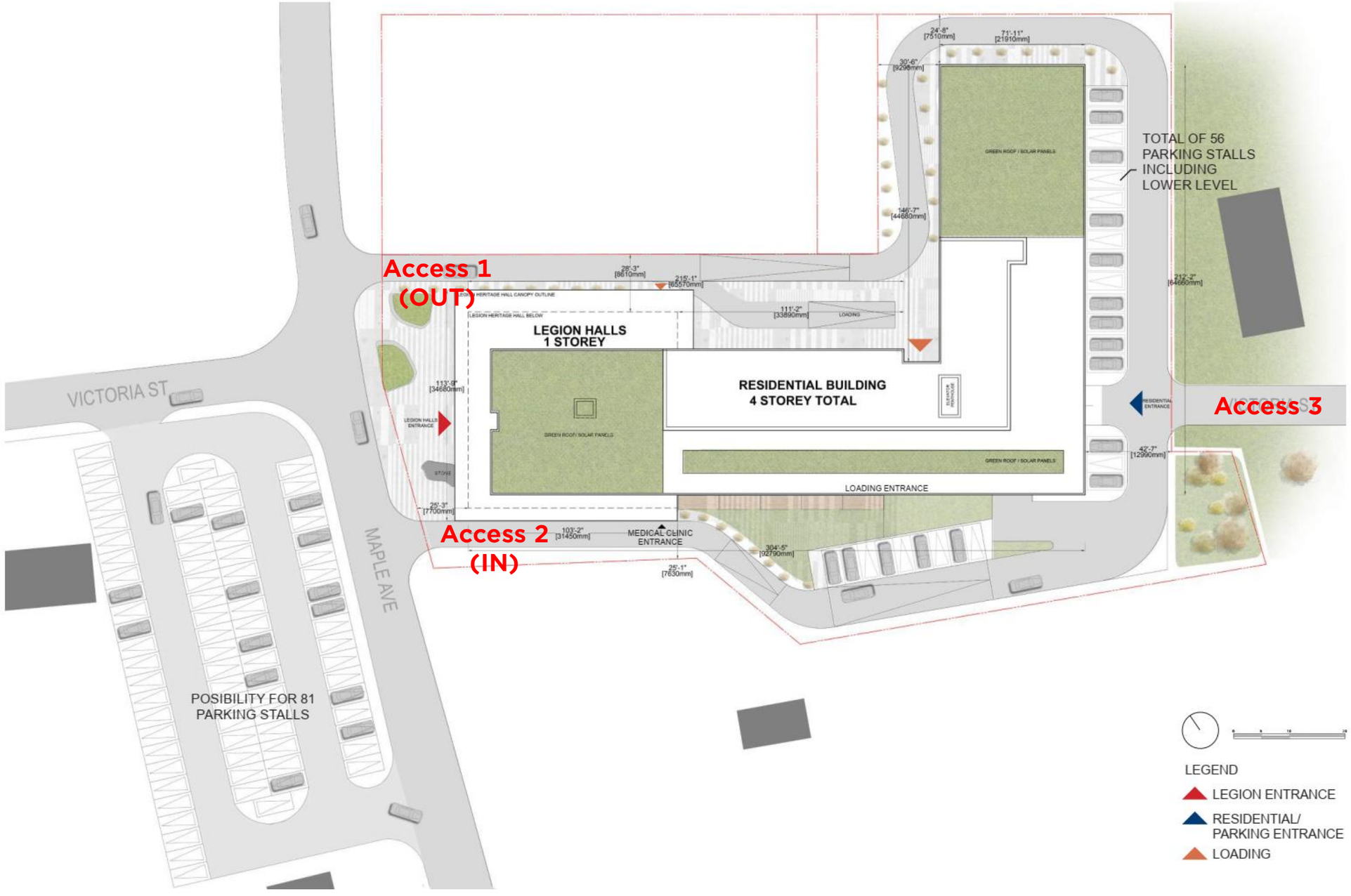
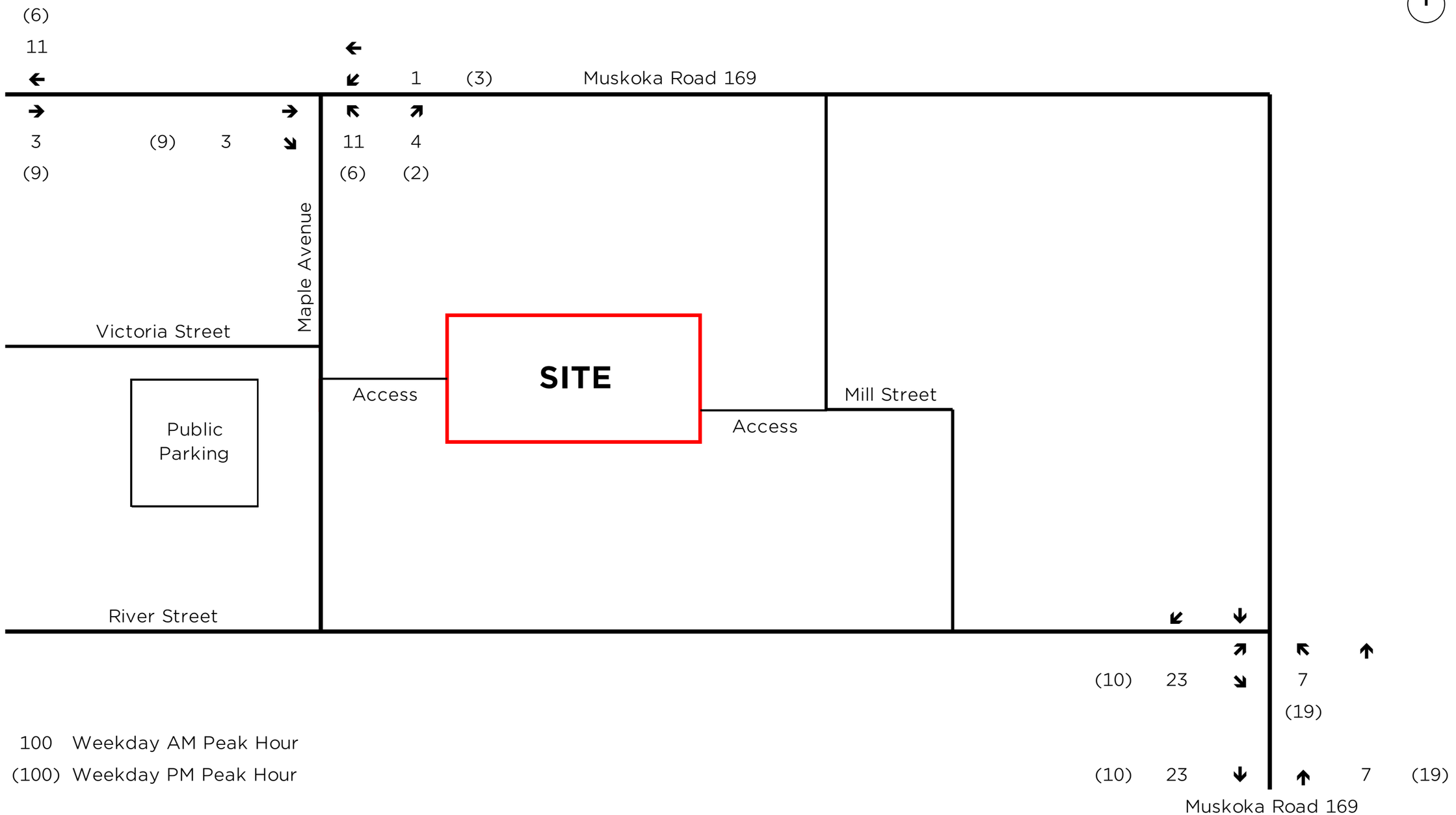


Figure 6: Site Plan



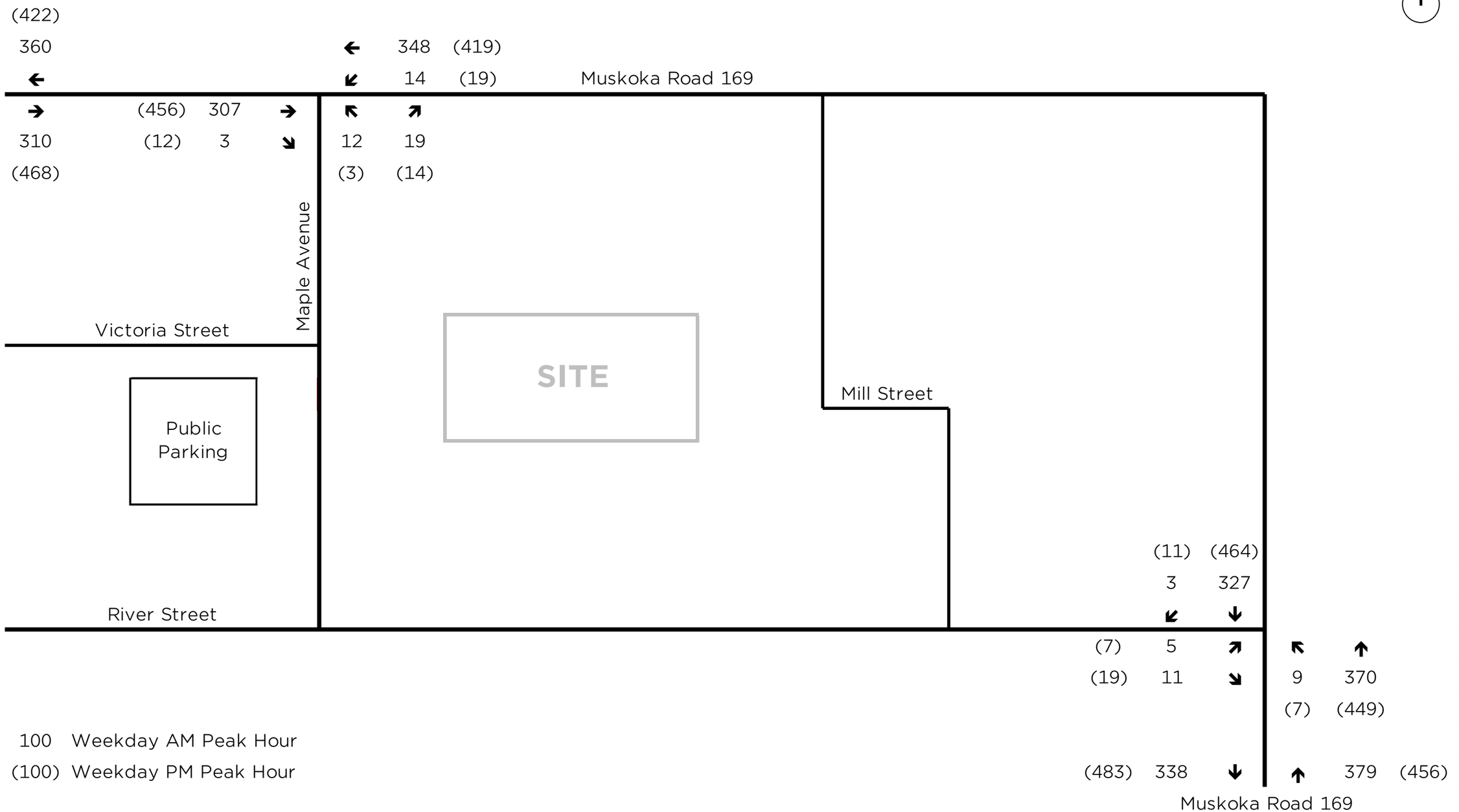
1011 MAPLE AVENUE – TRANSPORTATION IMPACT BRIEF

Figure 7: Sight Lines



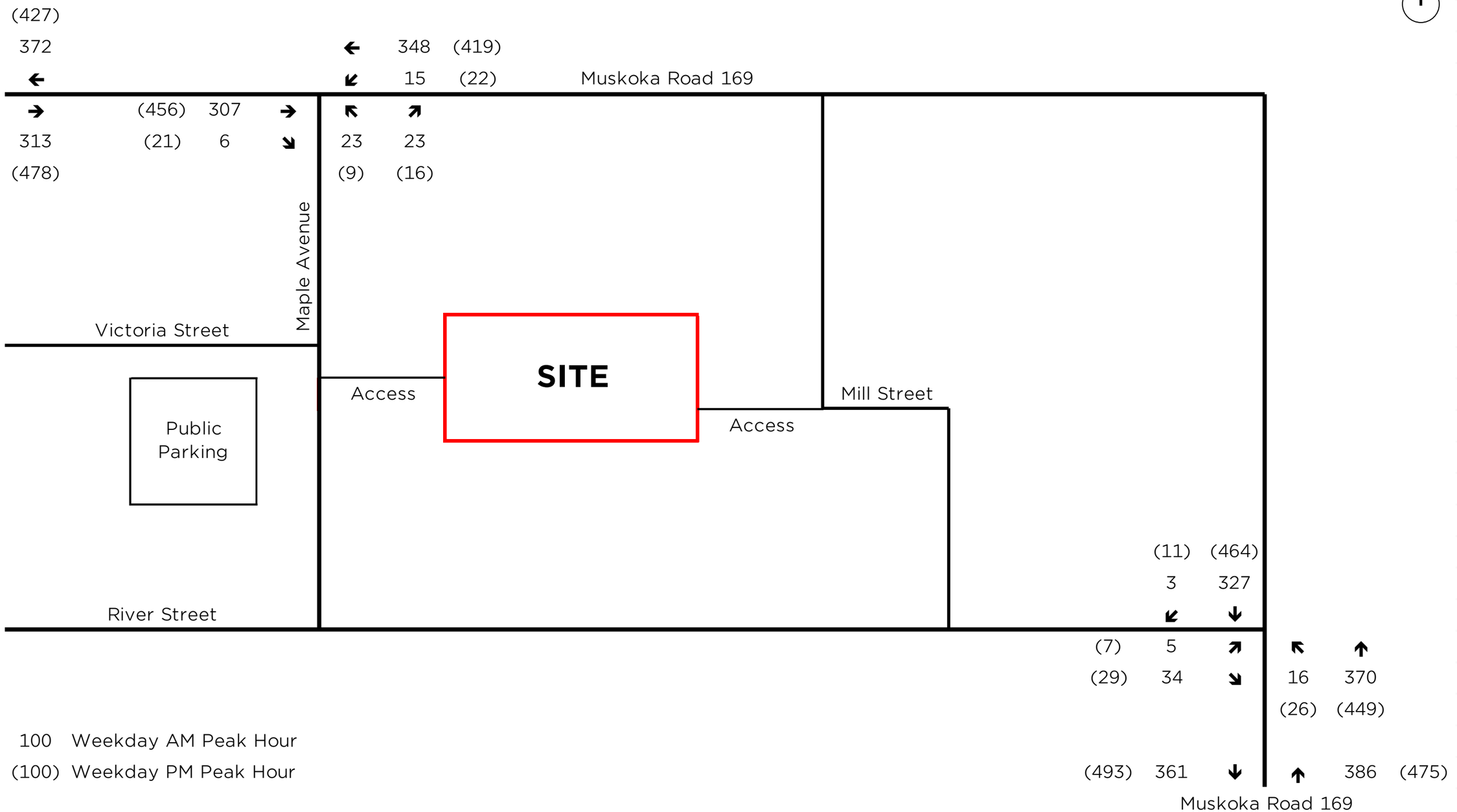
1011 MAPLE AVENUE – TRANSPORTATION IMPACT BRIEF

Figure 8: Site Traffic



1011 MAPLE AVENUE – TRANSPORTATION IMPACT BRIEF

Figure 9: Traffic Volumes – 2034 Background



1011 MAPLE AVENUE – TRANSPORTATION IMPACT BRIEF

Figure 10: Traffic Volumes – 2034 Total

Appendix A: Traffic Data

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 11:00:00

One Hour Peak
From: 10:00:00
To: 11:00:00

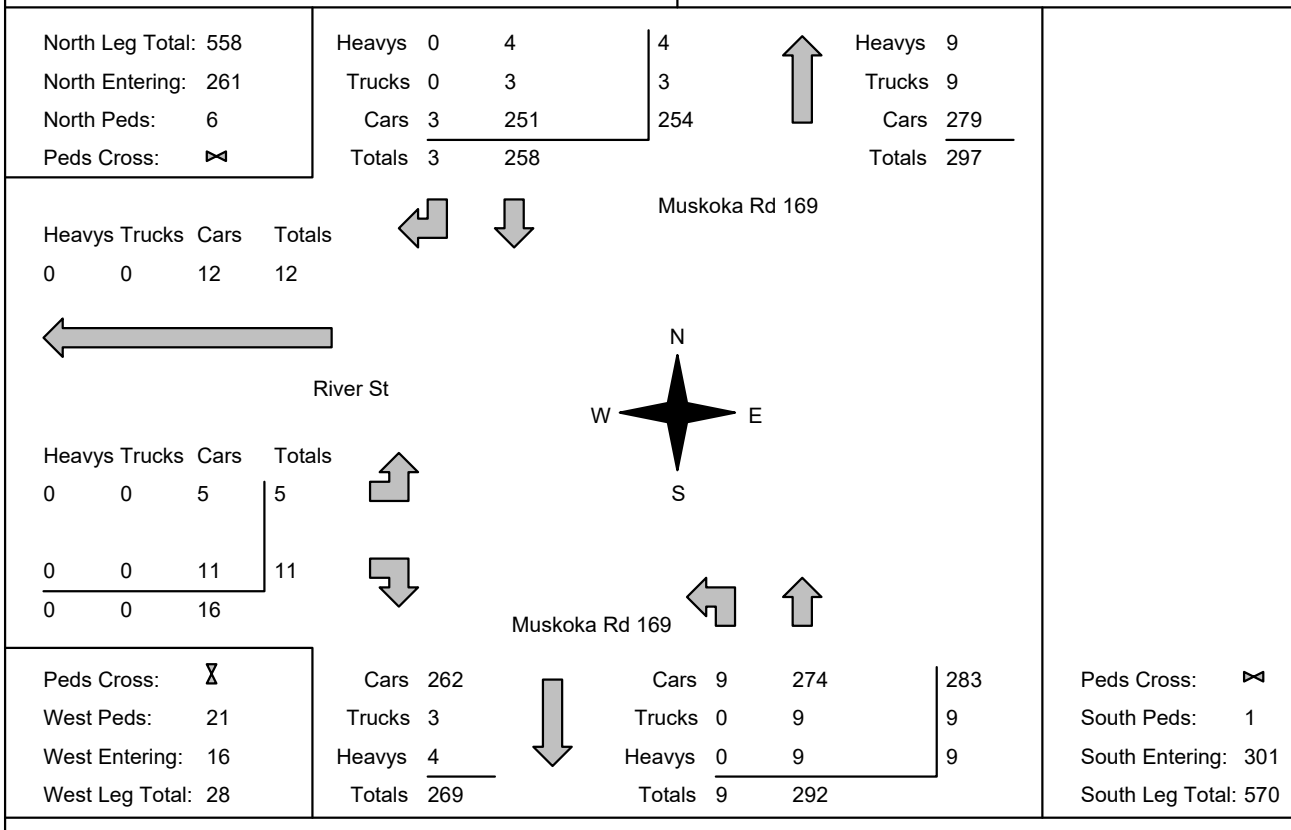
Municipality: Muskoka Lakes
Site #: 2414000002
Intersection: Muskoka Rd 169 & River St
TFR File #: 1
Count date: 15-Aug-24

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: Muskoka Rd 169 runs N/S



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Mid-day Peak Diagram

Specified Period
From: 11:00:00
To: 15:00:00

One Hour Peak
From: 11:30:00
To: 12:30:00

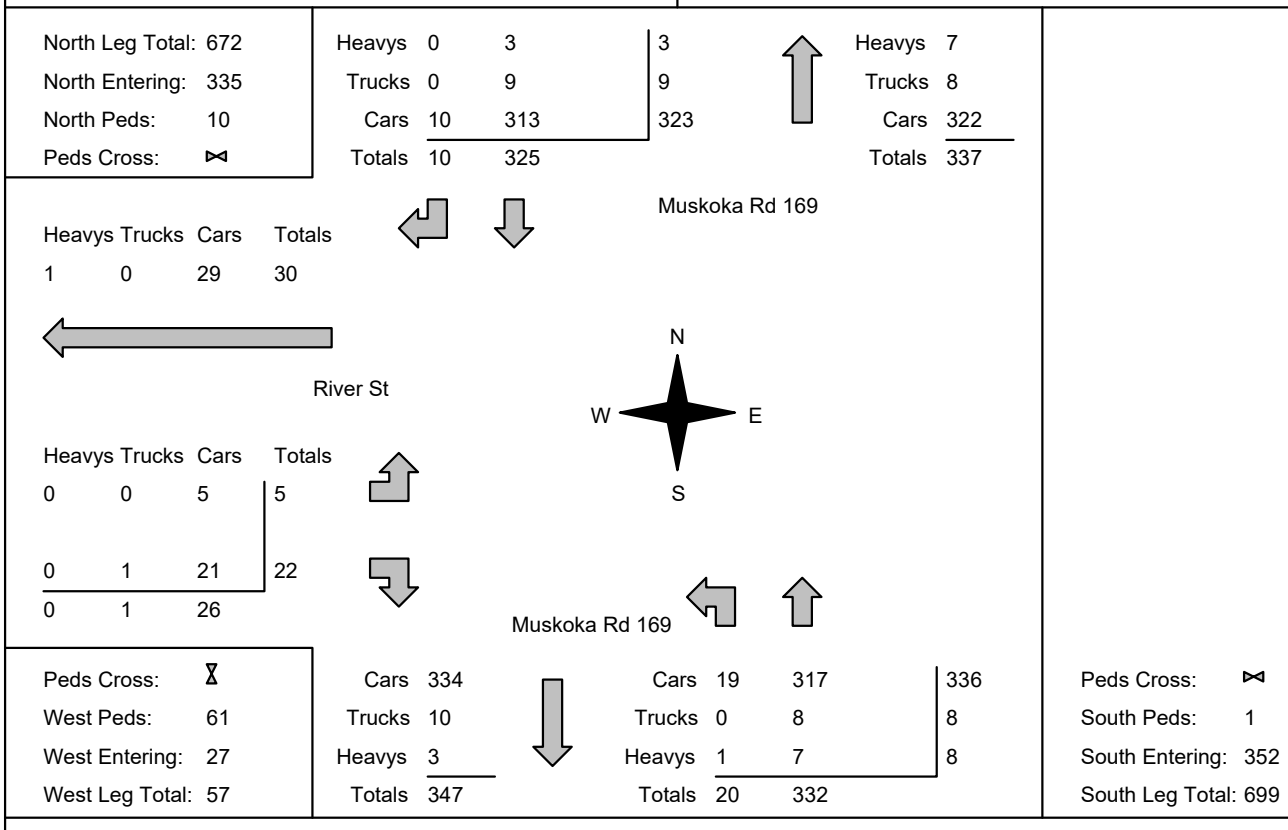
Municipality: Muskoka Lakes
Site #: 2414000002
Intersection: Muskoka Rd 169 & River St
TFR File #: 1
Count date: 15-Aug-24

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: Muskoka Rd 169 runs N/S



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 19:00:00

One Hour Peak
From: 15:30:00
To: 16:30:00

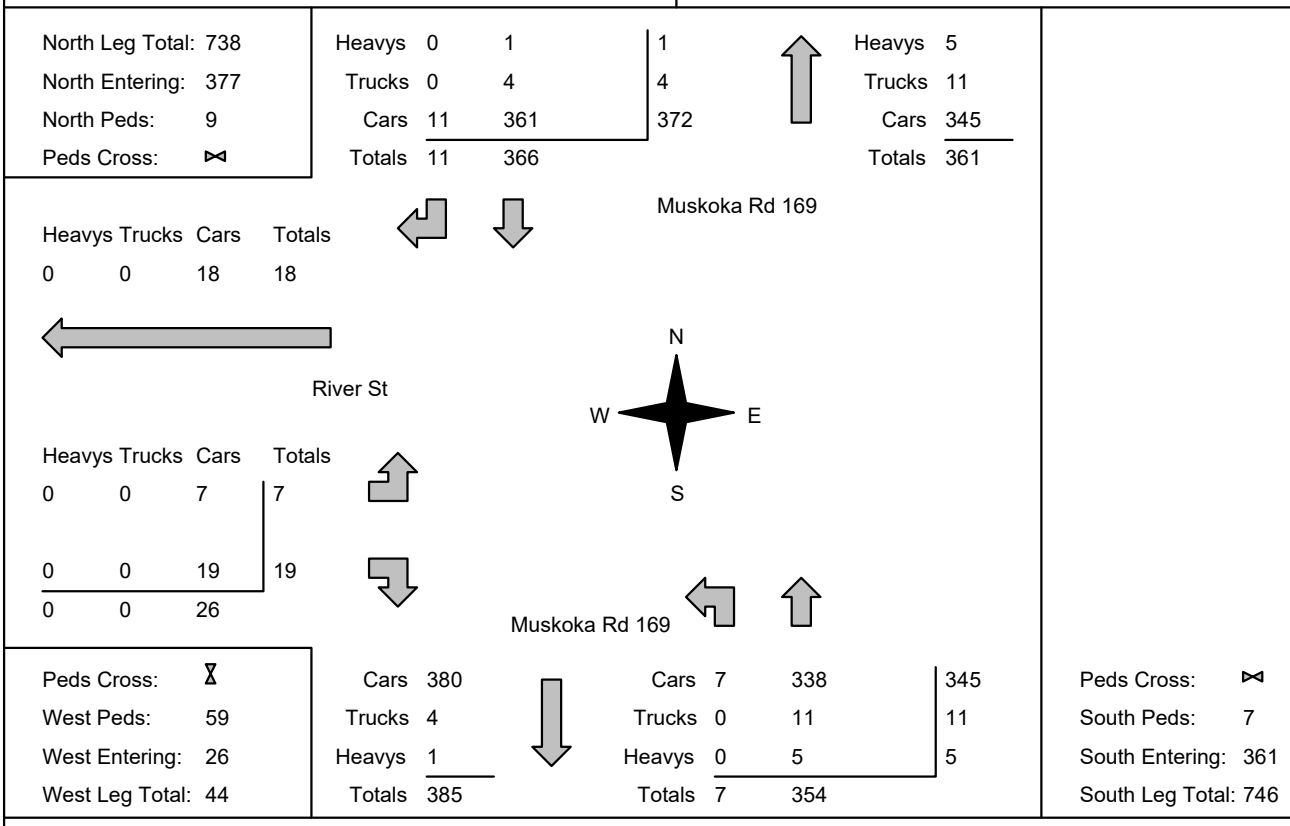
Municipality: Muskoka Lakes
Site #: 2414000002
Intersection: Muskoka Rd 169 & River St
TFR File #: 1
Count date: 15-Aug-24

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: Muskoka Rd 169 runs N/S



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Eight Hour Peak Diagram

Eight Hour Peak
From: 9:45:00
To: 17:45:00

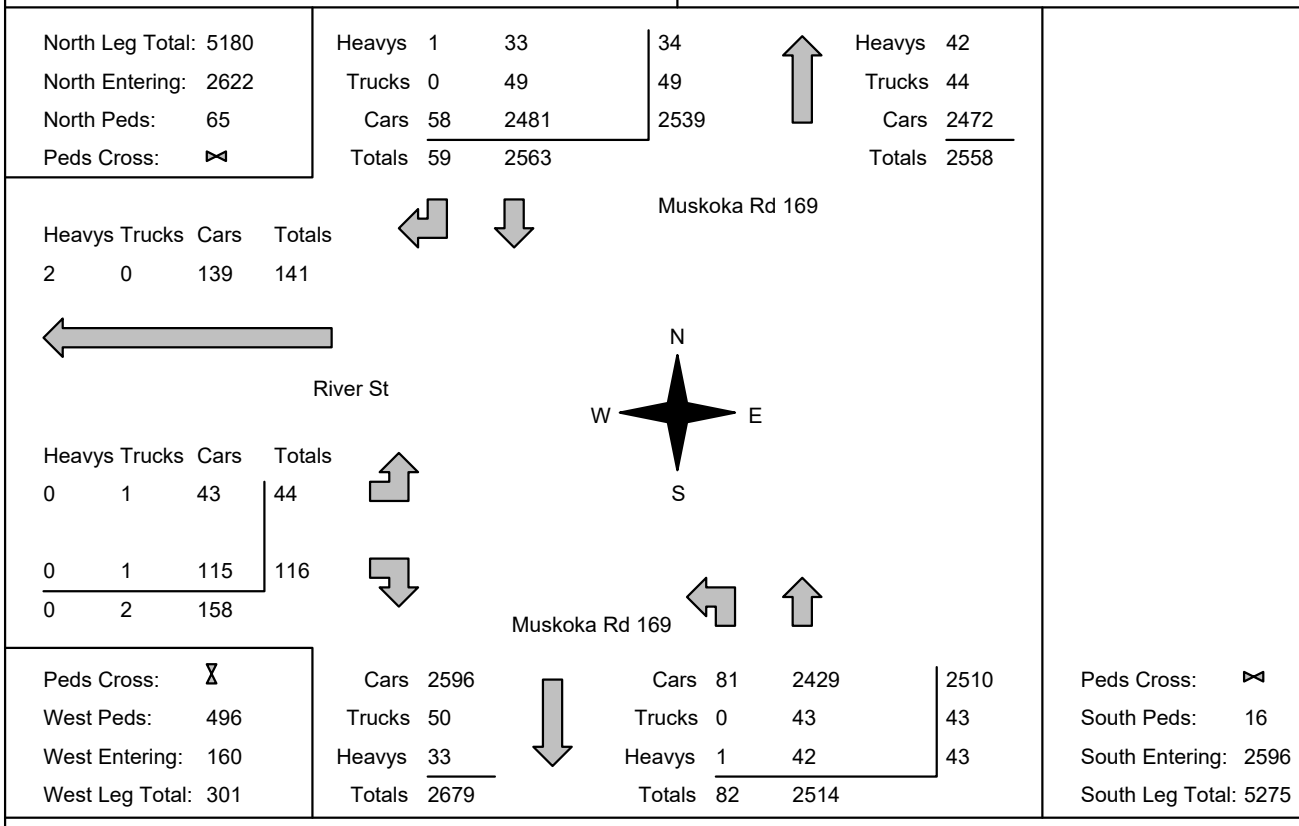
Municipality: Muskoka Lakes
Site #: 2414000002
Intersection: Muskoka Rd 169 & River St
TFR File #: 1
Count date: 15-Aug-24

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: Muskoka Rd 169 runs N/S



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Total Count Diagram

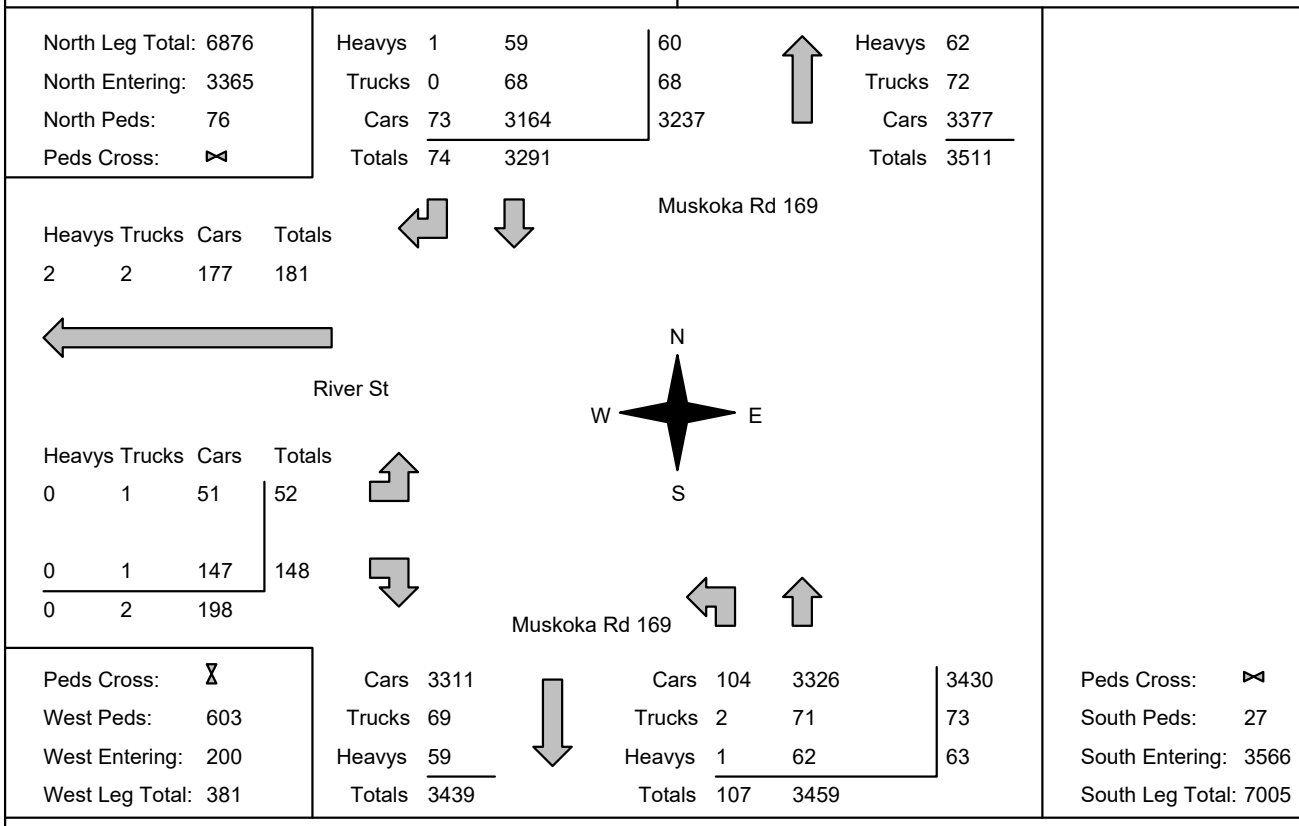
Municipality: Muskoka Lakes
Site #: 2414000002
Intersection: Muskoka Rd 169 & River St
TFR File #: 1
Count date: 15-Aug-24

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: Muskoka Rd 169 runs N/S



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Traffic Count Summary

Intersection: Muskoka Rd 169 & River St | **Count Date:** 15-Aug-24 | **Municipality:** Muskoka Lakes

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0
8:00:00	0	117	0	117	0
9:00:00	0	166	2	168	3
10:00:00	0	214	2	216	0
11:00:00	0	258	3	261	6
12:00:00	0	297	9	306	11
13:00:00	0	302	3	305	7
14:00:00	0	329	6	335	7
15:00:00	0	329	13	342	11
16:00:00	0	336	9	345	15
17:00:00	0	393	12	405	6
18:00:00	0	332	6	338	2
19:00:00	0	218	9	227	8
Totals:	0	3291	74	3365	76

North/South Total Approaches: 6931

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0
8:00:00	2	225	0	227	4
9:00:00	8	267	0	275	0
10:00:00	4	282	0	286	4
11:00:00	9	292	0	301	1
12:00:00	14	320	0	334	0
13:00:00	14	318	0	332	1
14:00:00	6	329	0	335	3
15:00:00	13	333	0	346	3
16:00:00	10	357	0	367	2
17:00:00	11	303	0	314	6
18:00:00	6	245	0	251	0
19:00:00	10	188	0	198	3
S Totals:	107	3459	0	3566	27

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0
8:00:00	0	0	0	0	0
9:00:00	0	0	0	0	0
10:00:00	0	0	0	0	0
11:00:00	0	0	0	0	0
12:00:00	0	0	0	0	0
13:00:00	0	0	0	0	0
14:00:00	0	0	0	0	0
15:00:00	0	0	0	0	0
16:00:00	0	0	0	0	0
17:00:00	0	0	0	0	0
18:00:00	0	0	0	0	0
19:00:00	0	0	0	0	0
Totals:	0	0	0	0	0

East/West Total Approaches: 200

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0
8:00:00	0	0	6	6	4
9:00:00	2	0	6	8	9
10:00:00	3	0	6	9	22
11:00:00	5	0	11	16	21
12:00:00	5	0	14	19	69
13:00:00	6	0	19	25	70
14:00:00	5	0	18	23	33
15:00:00	7	0	12	19	110
16:00:00	7	0	12	19	92
17:00:00	4	0	20	24	67
18:00:00	6	0	10	16	50
19:00:00	2	0	14	16	56
W Totals:	52	0	148	200	603

Calculated Values for Traffic Crossing Major Street

Hours Ending:	11:00	12:00	13:00	14:00	15:00	16:00	17:00	19:00
Crossing Values:	12	16	14	15	21	24	16	13

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 15-Aug-24 Site #: 2414000002

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Heavys - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	26	26	0	0	0	0	1	1	0	0	0	0	2	2	0	0	0	0
7:30:00	0	0	50	24	0	0	0	0	2	1	0	0	0	0	5	3	0	0	0	0
7:45:00	0	0	71	21	0	0	0	0	4	2	0	0	0	0	5	0	0	0	0	0
8:00:00	0	0	104	33	0	0	0	0	6	2	0	0	0	0	7	2	0	0	0	0
8:15:00	0	0	135	31	0	0	0	0	6	0	0	0	0	0	8	1	0	0	1	1
8:30:00	0	0	175	40	0	0	0	0	10	4	0	0	0	0	12	4	0	0	3	2
8:45:00	0	0	215	40	0	0	0	0	10	0	0	0	0	0	14	2	0	0	3	0
9:00:00	0	0	259	44	2	2	0	0	10	0	0	0	0	0	14	0	0	0	3	0
9:15:00	0	0	311	52	4	2	0	0	12	2	0	0	0	0	16	2	0	0	3	0
9:30:00	0	0	357	46	4	0	0	0	14	2	0	0	0	0	18	2	0	0	3	0
9:45:00	0	0	414	57	4	0	0	0	15	1	0	0	0	0	22	4	0	0	3	0
10:00:00	0	0	456	42	4	0	0	0	16	1	0	0	0	0	25	3	0	0	3	0
10:15:00	0	0	529	73	5	1	0	0	16	0	0	0	0	0	27	2	0	0	3	0
10:30:00	0	0	589	60	6	1	0	0	17	1	0	0	0	0	28	1	0	0	3	0
10:45:00	0	0	645	56	6	0	0	0	18	1	0	0	0	0	28	0	0	0	5	2
11:00:00	0	0	707	62	7	1	0	0	19	1	0	0	0	0	29	1	0	0	9	4
11:15:00	0	0	773	66	7	0	0	0	22	3	0	0	0	0	30	1	0	0	15	6
11:30:00	0	0	842	69	7	0	0	0	24	2	0	0	0	0	33	3	0	0	15	0
11:45:00	0	0	918	76	11	4	0	0	27	3	0	0	0	0	33	0	0	0	15	0
12:00:00	0	0	988	70	16	5	0	0	30	3	0	0	0	0	34	1	0	0	20	5
12:15:00	0	0	1060	72	17	1	0	0	31	1	0	0	0	0	35	1	0	0	21	1
12:30:00	0	0	1155	95	17	0	0	0	33	2	0	0	0	0	36	1	0	0	25	4
12:45:00	0	0	1223	68	18	1	0	0	36	3	0	0	0	0	38	2	1	1	25	0
13:00:00	0	0	1278	55	18	0	0	0	37	1	0	0	0	0	39	1	1	0	27	2
13:15:00	0	0	1353	75	18	0	0	0	40	3	0	0	0	0	40	1	1	0	30	3
13:30:00	0	0	1425	72	20	2	0	0	41	1	0	0	0	0	43	3	1	0	30	0
13:45:00	0	0	1508	83	22	2	0	0	42	1	0	0	0	0	46	3	1	0	34	4
14:00:00	0	0	1592	84	24	2	0	0	44	2	0	0	0	0	47	1	1	0	34	0
14:15:00	0	0	1672	80	28	4	0	0	46	2	0	0	0	0	47	0	1	0	36	2
14:30:00	0	0	1748	76	29	1	0	0	47	1	0	0	0	0	48	1	1	0	40	4
14:45:00	0	0	1837	89	33	4	0	0	47	0	0	0	0	0	49	1	1	0	43	3
15:00:00	0	0	1912	75	37	4	0	0	50	3	0	0	0	0	50	1	1	0	45	2
15:15:00	0	0	1998	86	41	4	0	0	51	1	0	0	0	0	52	2	1	0	50	5
15:30:00	0	0	2078	80	42	1	0	0	52	1	0	0	0	0	52	0	1	0	53	3
15:45:00	0	0	2156	78	44	2	0	0	54	2	0	0	0	0	52	0	1	0	55	2
16:00:00	0	0	2242	86	46	2	0	0	54	0	0	0	0	0	52	0	1	0	60	5
16:15:00	0	0	2341	99	50	4	0	0	54	0	0	0	0	0	52	0	1	0	62	2
16:30:00	0	0	2439	98	53	3	0	0	56	2	0	0	0	0	53	1	1	0	62	0
16:45:00	0	0	2537	98	57	4	0	0	60	4	0	0	0	0	53	0	1	0	63	1

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 15-Aug-24 Site #: 2414000002

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Heavys - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
17:00:00	0	0	2626	89	58	1	0	0	61	1	0	0	0	0	54	1	1	0	66	3
17:15:00	0	0	2733	107	58	0	0	0	62	1	0	0	0	0	54	0	1	0	67	1
17:30:00	0	0	2829	96	59	1	0	0	63	1	0	0	0	0	55	1	1	0	67	0
17:45:00	0	0	2895	66	62	3	0	0	64	1	0	0	0	0	55	0	1	0	68	1
18:00:00	0	0	2950	55	64	2	0	0	66	2	0	0	0	0	57	2	1	0	68	0
18:15:00	0	0	3001	51	67	3	0	0	67	1	0	0	0	0	57	0	1	0	68	0
18:30:00	0	0	3060	59	67	0	0	0	68	1	0	0	0	0	57	0	1	0	68	0
18:45:00	0	0	3114	54	68	1	0	0	68	0	0	0	0	0	58	1	1	0	73	5
19:00:00	0	0	3164	50	73	5	0	0	68	0	0	0	0	0	59	1	1	0	76	3
19:15:00	0	0	3164	0	73	0	0	0	68	0	0	0	0	0	59	0	1	0	76	0
19:15:15	0	0	3164	0	73	0	0	0	68	0	0	0	0	0	59	0	1	0	76	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 15-Aug-24 Site #: 2414000002

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Heavys - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 15-Aug-24 Site #: 2414000002

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Heavys - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
17:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19:15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



Accu-Traffic Inc.

Count Date: 15-Aug-24 Site #: 2414000002

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Heavys - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	48	48	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
7:30:00	0	0	96	48	0	0	0	0	2	2	0	0	0	0	1	0	0	0	0	0
7:45:00	1	1	150	54	0	0	0	0	4	2	0	0	0	0	1	0	0	0	2	2
8:00:00	2	1	214	64	0	0	0	0	5	1	0	0	0	0	6	5	0	0	4	2
8:15:00	3	1	264	50	0	0	0	0	6	1	0	0	0	0	7	1	0	0	4	0
8:30:00	6	3	307	43	0	0	1	1	7	1	0	0	0	0	12	5	0	0	4	0
8:45:00	7	1	388	81	0	0	1	0	11	4	0	0	0	0	12	0	0	0	4	0
9:00:00	9	2	464	76	0	0	1	0	14	3	0	0	0	0	14	2	0	0	4	0
9:15:00	10	1	531	67	0	0	1	0	17	3	0	0	0	0	18	4	0	0	4	0
9:30:00	11	1	592	61	0	0	1	0	25	8	0	0	0	0	19	1	0	0	6	2
9:45:00	13	2	658	66	0	0	1	0	27	2	0	0	0	0	20	1	0	0	8	2
10:00:00	13	0	721	63	0	0	1	0	29	2	0	0	0	0	24	4	0	0	8	0
10:15:00	15	2	785	64	0	0	1	0	33	4	0	0	0	0	25	1	0	0	9	1
10:30:00	18	3	853	68	0	0	1	0	35	2	0	0	0	0	29	4	0	0	9	0
10:45:00	21	3	924	71	0	0	1	0	37	2	0	0	0	0	32	3	0	0	9	0
11:00:00	22	1	995	71	0	0	1	0	38	1	0	0	0	0	33	1	0	0	9	0
11:15:00	26	4	1058	63	0	0	1	0	41	3	0	0	0	0	34	1	0	0	9	0
11:30:00	27	1	1133	75	0	0	1	0	41	0	0	0	0	0	35	1	0	0	9	0
11:45:00	31	4	1222	89	0	0	1	0	42	1	0	0	0	0	38	3	0	0	9	0
12:00:00	36	5	1301	79	0	0	1	0	45	3	0	0	0	0	40	2	0	0	9	0
12:15:00	44	8	1383	82	0	0	1	0	48	3	0	0	1	1	42	2	0	0	10	1
12:30:00	46	2	1450	67	0	0	1	0	49	1	0	0	1	0	42	0	0	0	10	0
12:45:00	47	1	1527	77	0	0	1	0	49	0	0	0	1	0	43	1	0	0	10	0
13:00:00	49	2	1610	83	0	0	1	0	51	2	0	0	1	0	43	0	0	0	10	0
13:15:00	53	4	1697	87	0	0	1	0	52	1	0	0	1	0	44	1	0	0	10	0
13:30:00	53	0	1785	88	0	0	1	0	53	1	0	0	1	0	44	0	0	0	10	0
13:45:00	54	1	1869	84	0	0	1	0	54	1	0	0	1	0	45	1	0	0	10	0
14:00:00	55	1	1933	64	0	0	1	0	54	0	0	0	1	0	46	1	0	0	13	3
14:15:00	59	4	2015	82	0	0	1	0	54	0	0	0	1	0	48	2	0	0	13	0
14:30:00	63	4	2101	86	0	0	1	0	55	1	0	0	1	0	49	1	0	0	14	1
14:45:00	65	2	2188	87	0	0	1	0	55	0	0	0	1	0	50	1	0	0	14	0
15:00:00	68	3	2257	69	0	0	1	0	57	2	0	0	1	0	52	2	0	0	16	2
15:15:00	72	4	2345	88	0	0	1	0	57	0	0	0	1	0	55	3	0	0	16	0
15:30:00	74	2	2435	90	0	0	1	0	57	0	0	0	1	0	56	1	0	0	16	0
15:45:00	78	4	2516	81	0	0	1	0	62	5	0	0	1	0	58	2	0	0	16	0
16:00:00	78	0	2602	86	0	0	1	0	62	0	0	0	1	0	59	1	0	0	18	2
16:15:00	80	2	2689	87	0	0	1	0	65	3	0	0	1	0	60	1	0	0	23	5
16:30:00	81	1	2773	84	0	0	1	0	68	3	0	0	1	0	61	1	0	0	23	0
16:45:00	85	4	2835	62	0	0	1	0	68	0	0	0	1	0	61	0	0	0	23	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 15-Aug-24 Site #: 2414000002

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Heavys - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
17:00:00	89	4	2897	62	0	0	1	0	68	0	0	0	1	0	61	0	0	0	24	1
17:15:00	92	3	2964	67	0	0	1	0	68	0	0	0	1	0	61	0	0	0	24	0
17:30:00	93	1	3024	60	0	0	1	0	69	1	0	0	1	0	62	1	0	0	24	0
17:45:00	94	1	3087	63	0	0	1	0	70	1	0	0	1	0	62	0	0	0	24	0
18:00:00	94	0	3139	52	0	0	2	1	70	0	0	0	1	0	62	0	0	0	24	0
18:15:00	98	4	3180	41	0	0	2	0	70	0	0	0	1	0	62	0	0	0	26	2
18:30:00	99	1	3225	45	0	0	2	0	70	0	0	0	1	0	62	0	0	0	26	0
18:45:00	101	2	3284	59	0	0	2	0	70	0	0	0	1	0	62	0	0	0	26	0
19:00:00	104	3	3326	42	0	0	2	0	71	1	0	0	1	0	62	0	0	0	27	1
19:15:00	104	0	3326	0	0	0	2	0	71	0	0	0	1	0	62	0	0	0	27	0
19:15:15	104	0	3326	0	0	0	2	0	71	0	0	0	1	0	62	0	0	0	27	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 15-Aug-24 Site #: 2414000002

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Heavys - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	2	2
7:45:00	0	0	0	0	4	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0
8:00:00	0	0	0	0	6	2	0	0	0	0	0	0	0	0	0	0	0	0	4	2
8:15:00	0	0	0	0	7	1	0	0	0	0	0	0	0	0	0	0	0	0	6	2
8:30:00	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	7	1
8:45:00	1	1	0	0	11	4	0	0	0	0	0	0	0	0	0	0	0	0	8	1
9:00:00	2	1	0	0	12	1	0	0	0	0	0	0	0	0	0	0	0	0	13	5
9:15:00	3	1	0	0	14	2	0	0	0	0	0	0	0	0	0	0	0	0	15	2
9:30:00	4	1	0	0	14	0	0	0	0	0	0	0	0	0	0	0	0	0	20	5
9:45:00	5	1	0	0	15	1	0	0	0	0	0	0	0	0	0	0	0	0	33	13
10:00:00	5	0	0	0	18	3	0	0	0	0	0	0	0	0	0	0	0	0	35	2
10:15:00	7	2	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0	42	7
10:30:00	8	1	0	0	24	6	0	0	0	0	0	0	0	0	0	0	0	0	45	3
10:45:00	9	1	0	0	27	3	0	0	0	0	0	0	0	0	0	0	0	0	52	7
11:00:00	10	1	0	0	29	2	0	0	0	0	0	0	0	0	0	0	0	0	56	4
11:15:00	10	0	0	0	33	4	0	0	0	0	0	0	0	0	0	0	0	0	71	15
11:30:00	11	1	0	0	34	1	1	1	0	0	0	0	0	0	0	0	0	0	107	36
11:45:00	12	1	0	0	39	5	1	0	0	0	0	0	0	0	0	0	0	0	109	2
12:00:00	14	2	0	0	42	3	1	0	0	0	1	1	0	0	0	0	0	0	125	16
12:15:00	15	1	0	0	47	5	1	0	0	0	1	0	0	0	0	0	0	0	160	35
12:30:00	16	1	0	0	55	8	1	0	0	0	1	0	0	0	0	0	0	0	168	8
12:45:00	20	4	0	0	57	2	1	0	0	0	1	0	0	0	0	0	0	0	176	8
13:00:00	20	0	0	0	61	4	1	0	0	0	1	0	0	0	0	0	0	0	195	19
13:15:00	21	1	0	0	65	4	1	0	0	0	1	0	0	0	0	0	0	0	206	11
13:30:00	22	1	0	0	70	5	1	0	0	0	1	0	0	0	0	0	0	0	217	11
13:45:00	25	3	0	0	75	5	1	0	0	0	1	0	0	0	0	0	0	0	224	7
14:00:00	25	0	0	0	79	4	1	0	0	0	1	0	0	0	0	0	0	0	228	4
14:15:00	25	0	0	0	79	0	1	0	0	0	1	0	0	0	0	0	0	0	252	24
14:30:00	28	3	0	0	83	4	1	0	0	0	1	0	0	0	0	0	0	0	279	27
14:45:00	31	3	0	0	89	6	1	0	0	0	1	0	0	0	0	0	0	0	302	23
15:00:00	32	1	0	0	91	2	1	0	0	0	1	0	0	0	0	0	0	0	338	36
15:15:00	33	1	0	0	97	6	1	0	0	0	1	0	0	0	0	0	0	0	378	40
15:30:00	35	2	0	0	97	0	1	0	0	0	1	0	0	0	0	0	0	0	395	17
15:45:00	36	1	0	0	102	5	1	0	0	0	1	0	0	0	0	0	0	0	425	30
16:00:00	39	3	0	0	103	1	1	0	0	0	1	0	0	0	0	0	0	0	430	5
16:15:00	39	0	0	0	110	7	1	0	0	0	1	0	0	0	0	0	0	0	449	19
16:30:00	42	3	0	0	116	6	1	0	0	0	1	0	0	0	0	0	0	0	454	5
16:45:00	43	1	0	0	118	2	1	0	0	0	1	0	0	0	0	0	0	0	484	30

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 15-Aug-24 Site #: 2414000002

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Heavys - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
17:00:00	43	0	0	0	123	5	1	0	0	0	1	0	0	0	0	0	0	0	497	13
17:15:00	44	1	0	0	127	4	1	0	0	0	1	0	0	0	0	0	0	0	503	6
17:30:00	44	0	0	0	129	2	1	0	0	0	1	0	0	0	0	0	0	0	509	6
17:45:00	48	4	0	0	130	1	1	0	0	0	1	0	0	0	0	0	0	0	529	20
18:00:00	49	1	0	0	133	3	1	0	0	0	1	0	0	0	0	0	0	0	547	18
18:15:00	49	0	0	0	137	4	1	0	0	0	1	0	0	0	0	0	0	0	553	6
18:30:00	49	0	0	0	140	3	1	0	0	0	1	0	0	0	0	0	0	0	565	12
18:45:00	49	0	0	0	142	2	1	0	0	0	1	0	0	0	0	0	0	0	579	14
19:00:00	51	2	0	0	147	5	1	0	0	0	1	0	0	0	0	0	0	0	603	24
19:15:00	51	0	0	0	147	0	1	0	0	0	1	0	0	0	0	0	0	0	603	0
19:15:15	51	0	0	0	147	0	1	0	0	0	1	0	0	0	0	0	0	0	603	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 11:00:00

One Hour Peak
From: 10:00:00
To: 11:00:00

Municipality: Muskoka Lakes
Site #: 2414000001
Intersection: Muskoka Rd 169 & Grey St
TFR File #: 1
Count date: 15-Aug-24

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: Muskoka Rd 169 runs N/S

North Leg Total: 550
North Entering: 261
North Peds: 4
Peds Cross: ⋈

Heavys	0	4	0	4
Trucks	0	5	0	5
Cars	2	239	11	252
Totals	2	248	11	

Heavys	10
Trucks	10
Cars	269
Totals	289

East Leg Total: 52
East Entering: 26
East Peds: 8
Peds Cross: ⧖

Muskoka Rd 169

Heavys	Trucks	Cars	Totals
0	0	13	13

driveway

Heavys	Trucks	Cars	Totals
0	0	5	5
0	0	0	0
0	0	5	5
0	0	10	

N
W E
S

Cars	Trucks	Heavys	Totals
17	0	0	17
1	0	0	1
7	0	1	8
25	0	1	

Grey St

Cars	Trucks	Heavys	Totals
26	0	0	26

Muskoka Rd 169

Peds Cross: ⧖
West Peds: 17
West Entering: 10
West Leg Total: 23

Cars	251
Trucks	5
Heavys	5
Totals	261

Cars	10	247	15	272
Trucks	0	10	0	10
Heavys	0	10	0	10
Totals	10	267	15	

Peds Cross: ⋈
South Peds: 0
South Entering: 292
South Leg Total: 553

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Mid-day Peak Diagram

Specified Period
From: 11:00:00
To: 15:00:00

One Hour Peak
From: 13:00:00
To: 14:00:00

Municipality: Muskoka Lakes
Site #: 2414000001
Intersection: Muskoka Rd 169 & Grey St
TFR File #: 1
Count date: 15-Aug-24

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: Muskoka Rd 169 runs N/S

North Leg Total: 659
North Entering: 322
North Peds: 6
Peds Cross: ⋈

Heavys	0	8	1	9
Trucks	0	7	1	8
Cars	6	294	5	305
Totals	6	309	7	

Heavys	3
Trucks	4
Cars	330
Totals	337

East Leg Total: 58
East Entering: 29
East Peds: 2
Peds Cross: ⧖

Muskoka Rd 169

Heavys	Trucks	Cars	Totals
0	0	24	24

driveway

Heavys	Trucks	Cars	Totals
0	0	9	9
0	0	0	0
0	0	12	12
0	0	21	

Cars	Trucks	Heavys	Totals
11	0	0	11
1	0	0	1
17	0	0	17
29	0	0	

N
W E
S

Grey St

Cars	Trucks	Heavys	Totals
27	1	1	29

Muskoka Rd 169

Peds Cross: ⧖
West Peds: 10
West Entering: 21
West Leg Total: 45

Cars	323
Trucks	7
Heavys	8
Totals	338

Cars	17	310	22	349
Trucks	0	4	0	4
Heavys	0	3	0	3
Totals	17	317	22	

Peds Cross: ⋈
South Peds: 12
South Entering: 356
South Leg Total: 694

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 19:00:00

One Hour Peak
From: 15:30:00
To: 16:30:00

Municipality: Muskoka Lakes
Site #: 2414000001
Intersection: Muskoka Rd 169 & Grey St
TFR File #: 1
Count date: 15-Aug-24

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: Muskoka Rd 169 runs N/S

North Leg Total: 723
North Entering: 374
North Peds: 3
Peds Cross: ⋈

Heavys	0	1	0	1
Trucks	0	4	0	4
Cars	4	353	12	369
Totals	4	358	12	

Heavys	5
Trucks	11
Cars	333
Totals	349

East Leg Total: 47
East Entering: 22
East Peds: 20
Peds Cross: ⧖

Muskoka Rd 169

Heavys	Trucks	Cars	Totals
0	0	21	21

driveway

Cars	Trucks	Heavys	Totals
11	1	0	12
1	0	0	1
9	0	0	9
21	1	0	

N
W E
S

Heavys	Trucks	Cars	Totals
0	0	7	7
0	0	1	1
0	0	4	4
0	0	12	

Grey St

Cars	Trucks	Heavys	Totals
24	1	0	25

Muskoka Rd 169

Peds Cross: ⧖
West Peds: 6
West Entering: 12
West Leg Total: 33

Cars	366
Trucks	4
Heavys	1
Totals	371

Cars	16	315	11	342
Trucks	0	10	1	11
Heavys	0	5	0	5
Totals	16	330	12	

Peds Cross: ⋈
South Peds: 2
South Entering: 358
South Leg Total: 729

Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Eight Hour Peak Diagram

Eight Hour Peak
From: 10:00:00
To: 18:00:00

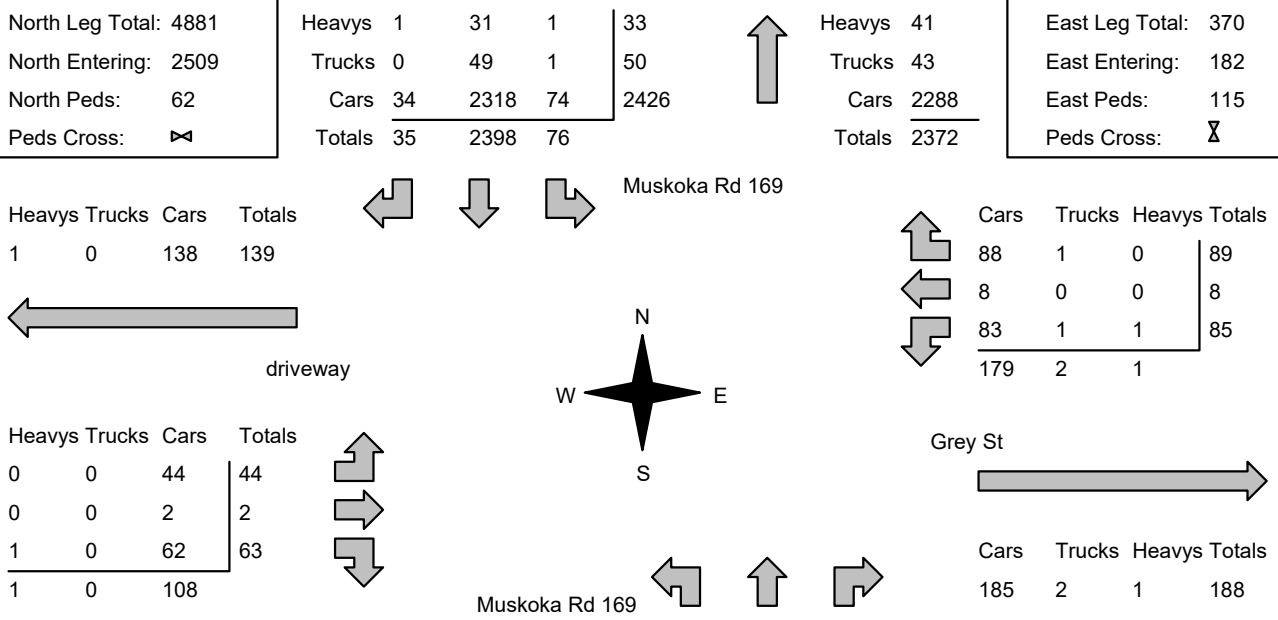
Municipality: Muskoka Lakes
Site #: 2414000001
Intersection: Muskoka Rd 169 & Grey St
TFR File #: 1
Count date: 15-Aug-24

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: Muskoka Rd 169 runs N/S



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Total Count Diagram

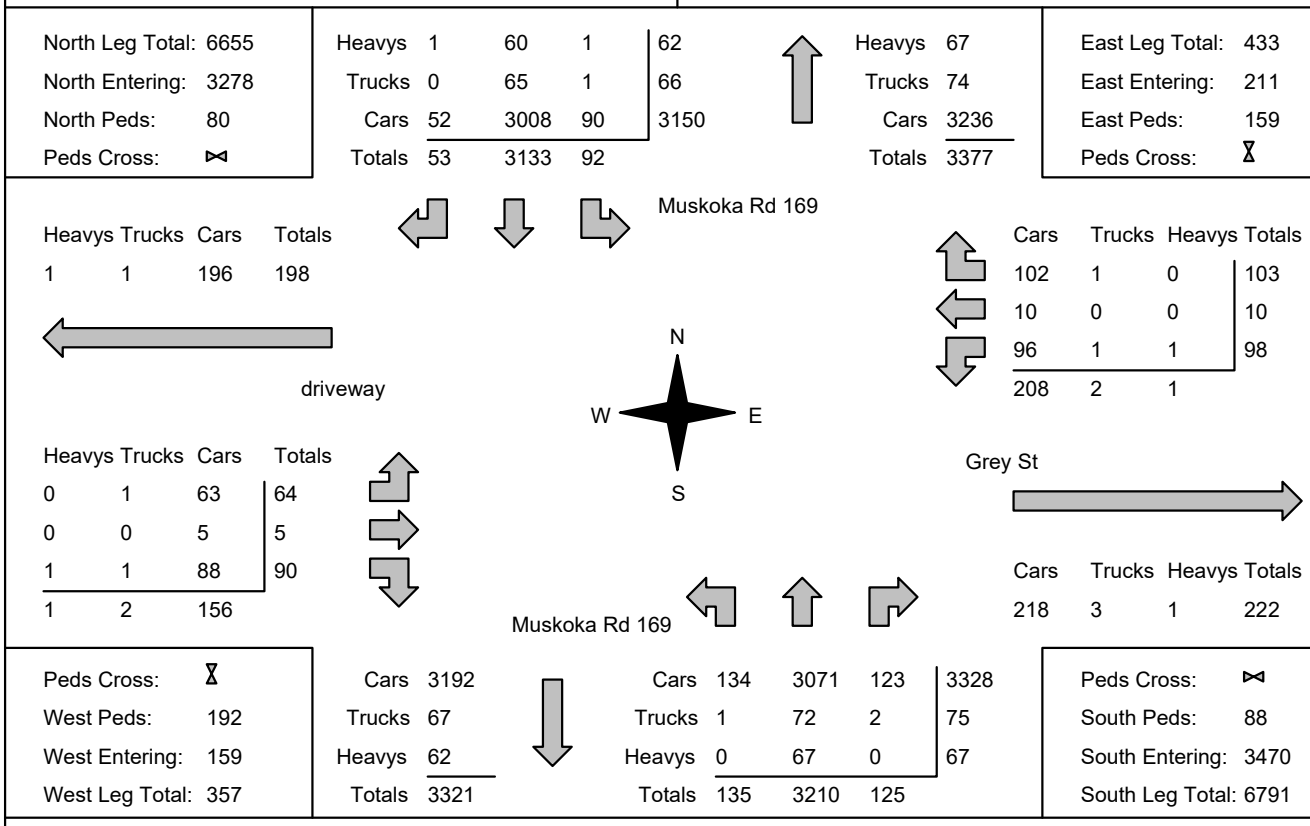
Municipality: Muskoka Lakes
Site #: 2414000001
Intersection: Muskoka Rd 169 & Grey St
TFR File #: 1
Count date: 15-Aug-24

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Non-Signalized Intersection ****

Major Road: Muskoka Rd 169 runs N/S



Comments

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Traffic Count Summary

Intersection: Muskoka Rd 169 & Grey St | **Count Date:** 15-Aug-24 | **Municipality:** Muskoka Lakes

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0
8:00:00	1	105	4	110	5
9:00:00	5	158	6	169	5
10:00:00	4	202	6	212	6
11:00:00	11	248	2	261	4
12:00:00	17	280	7	304	13
13:00:00	8	248	11	267	15
14:00:00	7	309	6	322	6
15:00:00	10	325	1	336	11
16:00:00	13	334	5	352	4
17:00:00	5	373	2	380	8
18:00:00	6	337	2	345	1
19:00:00	5	214	1	220	2
Totals:	92	3133	53	3278	80

North/South Total Approaches: 6748

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0
8:00:00	12	224	1	237	1
9:00:00	10	258	2	270	0
10:00:00	9	260	6	275	1
11:00:00	10	267	15	292	0
12:00:00	12	267	21	300	11
13:00:00	20	282	13	315	17
14:00:00	17	317	22	356	12
15:00:00	7	312	12	331	20
16:00:00	14	326	10	350	4
17:00:00	9	285	14	308	7
18:00:00	8	238	3	249	3
19:00:00	7	174	6	187	12
S Totals:	135	3210	125	3470	88

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0
8:00:00	4	0	3	7	4
9:00:00	2	1	5	8	3
10:00:00	1	0	4	5	20
11:00:00	8	1	17	26	8
12:00:00	16	1	12	29	29
13:00:00	10	2	12	24	17
14:00:00	17	1	11	29	2
15:00:00	11	1	15	27	18
16:00:00	6	2	13	21	22
17:00:00	10	0	9	19	15
18:00:00	8	0	1	9	5
19:00:00	5	1	1	7	16
Totals:	98	10	103	211	159

East/West Total Approaches: 370

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0
8:00:00	6	1	3	10	2
9:00:00	7	1	6	14	9
10:00:00	5	1	4	10	11
11:00:00	5	0	5	10	17
12:00:00	7	0	9	16	16
13:00:00	7	0	19	26	48
14:00:00	9	0	12	21	10
15:00:00	5	1	4	10	32
16:00:00	5	0	5	10	7
17:00:00	3	1	6	10	8
18:00:00	3	0	9	12	8
19:00:00	2	0	8	10	24
W Totals:	64	5	90	159	192

Calculated Values for Traffic Crossing Major Street

Hours Ending:	11:00	12:00	13:00	14:00	15:00	16:00	17:00	19:00
Crossing Values:	18	48	51	45	48	21	29	22

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 15-Aug-24 Site #: 2414000001

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Heavys - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	1	1	23	23	1	1	0	0	1	1	0	0	0	0	2	2	0	0	2	2
7:30:00	1	0	47	24	2	1	0	0	1	0	0	0	0	0	5	3	0	0	5	3
7:45:00	1	0	64	17	4	2	0	0	2	1	0	0	0	0	6	1	0	0	5	0
8:00:00	1	0	93	29	4	0	0	0	4	2	0	0	0	0	8	2	0	0	5	0
8:15:00	1	0	128	35	6	2	0	0	4	0	0	0	0	0	9	1	0	0	9	4
8:30:00	3	2	168	40	6	0	0	0	7	3	0	0	0	0	13	4	0	0	9	0
8:45:00	5	2	202	34	8	2	0	0	7	0	0	0	0	0	15	2	0	0	9	0
9:00:00	6	1	241	39	10	2	0	0	7	0	0	0	0	0	15	0	0	0	10	1
9:15:00	7	1	296	55	11	1	0	0	9	2	0	0	0	0	17	2	0	0	13	3
9:30:00	8	1	334	38	12	1	0	0	11	2	0	0	0	0	19	2	0	0	13	0
9:45:00	10	2	385	51	14	2	0	0	12	1	0	0	0	0	23	4	0	0	13	0
10:00:00	10	0	426	41	16	2	0	0	13	1	0	0	0	0	26	3	0	0	16	3
10:15:00	11	1	491	65	16	0	0	0	14	1	0	0	0	0	27	1	0	0	18	2
10:30:00	13	2	550	59	18	2	0	0	16	2	0	0	0	0	28	1	0	0	18	0
10:45:00	16	3	610	60	18	0	0	0	18	2	0	0	0	0	28	0	0	0	19	1
11:00:00	21	5	665	55	18	0	0	0	18	0	0	0	0	0	30	2	0	0	20	1
11:15:00	24	3	731	66	19	1	0	0	20	2	0	0	0	0	31	1	0	0	25	5
11:30:00	27	3	799	68	20	1	0	0	23	3	0	0	0	0	33	2	0	0	28	3
11:45:00	32	5	865	66	20	0	0	0	24	1	0	0	0	0	35	2	0	0	28	0
12:00:00	38	6	929	64	25	5	0	0	28	4	0	0	0	0	36	1	0	0	33	5
12:15:00	42	4	982	53	26	1	0	0	29	1	0	0	0	0	36	0	0	0	34	1
12:30:00	44	2	1056	74	33	7	0	0	32	3	0	0	0	0	37	1	0	0	43	9
12:45:00	44	0	1117	61	34	1	0	0	34	2	0	0	0	0	40	3	0	0	43	0
13:00:00	46	2	1166	49	36	2	0	0	34	0	0	0	0	0	41	1	0	0	48	5
13:15:00	47	1	1237	71	38	2	0	0	36	2	0	0	1	1	43	2	0	0	51	3
13:30:00	48	1	1302	65	40	2	0	0	38	2	0	0	1	0	45	2	0	0	54	3
13:45:00	49	1	1385	83	40	0	0	0	39	1	0	0	1	0	49	4	0	0	54	0
14:00:00	51	2	1460	75	42	2	1	1	41	2	0	0	1	0	49	0	0	0	54	0
14:15:00	54	3	1543	83	42	0	1	0	43	2	0	0	1	0	49	0	0	0	57	3
14:30:00	58	4	1614	71	43	1	1	0	47	4	0	0	1	0	49	0	0	0	59	2
14:45:00	59	1	1697	83	43	0	1	0	47	0	0	0	1	0	51	2	0	0	65	6
15:00:00	61	2	1773	76	43	0	1	0	50	3	0	0	1	0	52	1	0	0	65	0
15:15:00	64	3	1860	87	44	1	1	0	51	1	0	0	1	0	53	1	0	0	68	3
15:30:00	66	2	1938	78	44	0	1	0	52	1	0	0	1	0	53	0	0	0	68	0
15:45:00	71	5	2016	78	46	2	1	0	54	2	0	0	1	0	53	0	0	0	68	0
16:00:00	74	3	2102	86	48	2	1	0	54	0	0	0	1	0	53	0	0	0	69	1
16:15:00	75	1	2203	101	48	0	1	0	54	0	0	0	1	0	53	0	0	0	70	1
16:30:00	78	3	2291	88	48	0	1	0	56	2	0	0	1	0	54	1	0	0	71	1
16:45:00	79	1	2389	98	50	2	1	0	58	2	0	0	1	0	55	1	0	0	74	3

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 15-Aug-24 Site #: 2414000001

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Heavys - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
17:00:00	79	0	2467	78	50	0	1	0	59	1	0	0	1	0	56	1	0	0	77	3
17:15:00	81	2	2568	101	50	0	1	0	61	2	0	0	1	0	56	0	0	0	78	1
17:30:00	84	3	2676	108	50	0	1	0	61	0	0	0	1	0	57	1	0	0	78	0
17:45:00	84	0	2744	68	50	0	1	0	62	1	0	0	1	0	57	0	1	1	78	0
18:00:00	85	1	2797	53	51	1	1	0	64	2	0	0	1	0	58	1	1	0	78	0
18:15:00	89	4	2849	52	51	0	1	0	65	1	0	0	1	0	58	0	1	0	78	0
18:30:00	89	0	2897	48	51	0	1	0	65	0	0	0	1	0	58	0	1	0	78	0
18:45:00	90	1	2952	55	51	0	1	0	65	0	0	0	1	0	59	1	1	0	80	2
19:00:00	90	0	3008	56	52	1	1	0	65	0	0	0	1	0	60	1	1	0	80	0
19:15:00	90	0	3008	0	52	0	1	0	65	0	0	0	1	0	60	0	1	0	80	0
19:15:15	90	0	3008	0	52	0	1	0	65	0	0	0	1	0	60	0	1	0	80	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 15-Aug-24 Site #: 2414000001

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Heavys - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	1	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1
7:30:00	2	1	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	3	2
7:45:00	3	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
8:00:00	4	1	0	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	4	1
8:15:00	4	0	0	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	5	1
8:30:00	4	0	0	0	5	1	0	0	0	0	0	0	0	0	0	0	0	0	6	1
8:45:00	5	1	1	1	7	2	0	0	0	0	0	0	0	0	0	0	0	0	6	0
9:00:00	6	1	1	0	8	1	0	0	0	0	0	0	0	0	0	0	0	0	7	1
9:15:00	6	0	1	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	15	8
9:30:00	6	0	1	0	10	2	0	0	0	0	0	0	0	0	0	0	0	0	21	6
9:45:00	7	1	1	0	11	1	0	0	0	0	0	0	0	0	0	0	0	0	26	5
10:00:00	7	0	1	0	12	1	0	0	0	0	0	0	0	0	0	0	0	0	27	1
10:15:00	10	3	1	0	13	1	0	0	0	0	0	0	1	1	0	0	0	0	30	3
10:30:00	11	1	1	0	15	2	0	0	0	0	0	0	1	0	0	0	0	0	31	1
10:45:00	13	2	2	1	18	3	0	0	0	0	0	0	1	0	0	0	0	0	33	2
11:00:00	14	1	2	0	29	11	0	0	0	0	0	0	1	0	0	0	0	0	35	2
11:15:00	14	0	2	0	32	3	0	0	0	0	0	0	1	0	0	0	0	0	36	1
11:30:00	17	3	3	1	33	1	0	0	0	0	0	0	1	0	0	0	0	0	41	5
11:45:00	26	9	3	0	35	2	0	0	0	0	0	0	1	0	0	0	0	0	51	10
12:00:00	30	4	3	0	41	6	0	0	0	0	0	0	1	0	0	0	0	0	64	13
12:15:00	32	2	3	0	48	7	0	0	0	0	0	0	1	0	0	0	0	0	66	2
12:30:00	36	4	3	0	49	1	0	0	0	0	0	0	1	0	0	0	0	0	74	8
12:45:00	38	2	3	0	50	1	0	0	0	0	0	0	1	0	0	0	0	0	81	7
13:00:00	40	2	5	2	53	3	0	0	0	0	0	0	1	0	0	0	0	0	81	0
13:15:00	44	4	5	0	58	5	0	0	0	0	0	0	1	0	0	0	0	0	81	0
13:30:00	46	2	6	1	61	3	0	0	0	0	0	0	1	0	0	0	0	0	83	2
13:45:00	54	8	6	0	62	1	0	0	0	0	0	0	1	0	0	0	0	0	83	0
14:00:00	57	3	6	0	64	2	0	0	0	0	0	0	1	0	0	0	0	0	83	0
14:15:00	61	4	6	0	67	3	0	0	0	0	0	0	1	0	0	0	0	0	86	3
14:30:00	63	2	7	1	70	3	0	0	0	0	0	0	1	0	0	0	0	0	90	4
14:45:00	66	3	7	0	75	5	0	0	0	0	0	0	1	0	0	0	0	0	98	8
15:00:00	68	2	7	0	79	4	0	0	0	0	0	0	1	0	0	0	0	0	101	3
15:15:00	68	0	8	1	82	3	0	0	0	0	0	0	1	0	0	0	0	0	104	3
15:30:00	69	1	8	0	84	2	0	0	0	0	0	0	1	0	0	0	0	0	107	3
15:45:00	72	3	8	0	89	5	0	0	0	0	1	1	1	0	0	0	0	0	123	16
16:00:00	74	2	9	1	91	2	0	0	0	0	1	0	1	0	0	0	0	0	123	0
16:15:00	76	2	9	0	92	1	0	0	0	0	1	0	1	0	0	0	0	0	124	1
16:30:00	78	2	9	0	95	3	0	0	0	0	1	0	1	0	0	0	0	0	127	3
16:45:00	82	4	9	0	97	2	0	0	0	0	1	0	1	0	0	0	0	0	133	6

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 15-Aug-24 Site #: 2414000001

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Heavys - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
17:00:00	84	2	9	0	100	3	0	0	0	0	1	0	1	0	0	0	0	0	138	5
17:15:00	87	3	9	0	100	0	0	0	0	0	1	0	1	0	0	0	0	0	140	2
17:30:00	89	2	9	0	100	0	1	1	0	0	1	0	1	0	0	0	0	0	141	1
17:45:00	90	1	9	0	100	0	1	0	0	0	1	0	1	0	0	0	0	0	142	1
18:00:00	91	1	9	0	101	1	1	0	0	0	1	0	1	0	0	0	0	0	143	1
18:15:00	93	2	10	1	101	0	1	0	0	0	1	0	1	0	0	0	0	0	145	2
18:30:00	94	1	10	0	101	0	1	0	0	0	1	0	1	0	0	0	0	0	150	5
18:45:00	95	1	10	0	102	1	1	0	0	0	1	0	1	0	0	0	0	0	156	6
19:00:00	96	1	10	0	102	0	1	0	0	0	1	0	1	0	0	0	0	0	159	3
19:15:00	96	0	10	0	102	0	1	0	0	0	1	0	1	0	0	0	0	0	159	0
19:15:15	96	0	10	0	102	0	1	0	0	0	1	0	1	0	0	0	0	0	159	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 15-Aug-24 Site #: 2414000001

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Heavys - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	2	2	48	48	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0
7:30:00	5	3	92	44	0	0	0	0	1	1	0	0	0	0	2	0	0	0	0	0
7:45:00	6	1	144	52	1	1	0	0	3	2	0	0	0	0	2	0	0	0	0	0
8:00:00	12	6	212	68	1	0	0	0	5	2	0	0	0	0	7	5	0	0	1	1
8:15:00	14	2	261	49	1	0	0	0	5	0	1	1	0	0	8	1	0	0	1	0
8:30:00	16	2	306	45	1	0	0	0	7	2	1	0	0	0	14	6	0	0	1	0
8:45:00	22	6	381	75	1	0	0	0	11	4	1	0	0	0	14	0	0	0	1	0
9:00:00	22	0	453	72	2	1	0	0	13	2	1	0	0	0	16	2	0	0	1	0
9:15:00	24	2	517	64	4	2	0	0	16	3	1	0	0	0	20	4	0	0	1	0
9:30:00	26	2	572	55	5	1	0	0	25	9	1	0	0	0	21	1	0	0	1	0
9:45:00	29	3	637	65	5	0	0	0	29	4	1	0	0	0	22	1	0	0	2	1
10:00:00	30	1	686	49	8	3	1	1	30	1	1	0	0	0	26	4	0	0	2	0
10:15:00	32	2	745	59	9	1	1	0	33	3	1	0	0	0	27	1	0	0	2	0
10:30:00	34	2	801	56	14	5	1	0	35	2	1	0	0	0	32	5	0	0	2	0
10:45:00	35	1	865	64	19	5	1	0	37	2	1	0	0	0	34	2	0	0	2	0
11:00:00	40	5	933	68	23	4	1	0	40	3	1	0	0	0	36	2	0	0	2	0
11:15:00	41	1	992	59	28	5	1	0	43	3	1	0	0	0	38	2	0	0	2	0
11:30:00	43	2	1047	55	32	4	1	0	43	0	1	0	0	0	40	2	0	0	7	5
11:45:00	48	5	1128	81	38	6	1	0	44	1	1	0	0	0	43	3	0	0	8	1
12:00:00	52	4	1185	57	44	6	1	0	46	2	1	0	0	0	45	2	0	0	13	5
12:15:00	54	2	1262	77	48	4	1	0	49	3	1	0	0	0	47	2	0	0	18	5
12:30:00	57	3	1319	57	49	1	1	0	51	2	1	0	0	0	48	1	0	0	20	2
12:45:00	64	7	1393	74	53	4	1	0	51	0	1	0	0	0	49	1	0	0	25	5
13:00:00	72	8	1457	64	57	4	1	0	52	1	1	0	0	0	49	0	0	0	30	5
13:15:00	78	6	1544	87	61	4	1	0	53	1	1	0	0	0	50	1	0	0	36	6
13:30:00	79	1	1625	81	67	6	1	0	55	2	1	0	0	0	50	0	0	0	38	2
13:45:00	82	3	1709	84	74	7	1	0	56	1	1	0	0	0	51	1	0	0	41	3
14:00:00	89	7	1767	58	79	5	1	0	56	0	1	0	0	0	52	1	0	0	42	1
14:15:00	90	1	1842	75	80	1	1	0	56	0	1	0	0	0	54	2	0	0	46	4
14:30:00	93	3	1926	84	84	4	1	0	57	1	1	0	0	0	55	1	0	0	50	4
14:45:00	94	1	2010	84	89	5	1	0	57	0	1	0	0	0	56	1	0	0	62	12
15:00:00	96	2	2072	62	91	2	1	0	58	1	1	0	0	0	57	1	0	0	62	0
15:15:00	97	1	2149	77	94	3	1	0	59	1	1	0	0	0	60	3	0	0	65	3
15:30:00	101	4	2235	86	95	1	1	0	59	0	1	0	0	0	61	1	0	0	66	1
15:45:00	104	3	2307	72	99	4	1	0	64	5	2	1	0	0	63	2	0	0	66	0
16:00:00	110	6	2385	78	100	1	1	0	64	0	2	0	0	0	64	1	0	0	66	0
16:15:00	112	2	2464	79	103	3	1	0	66	2	2	0	0	0	65	1	0	0	68	2
16:30:00	117	5	2550	86	106	3	1	0	69	3	2	0	0	0	66	1	0	0	68	0
16:45:00	117	0	2607	57	111	5	1	0	70	1	2	0	0	0	66	0	0	0	70	2

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 15-Aug-24 Site #: 2414000001

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Heavys - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
17:00:00	119	2	2662	55	114	3	1	0	70	0	2	0	0	0	66	0	0	0	73	3
17:15:00	122	3	2719	57	115	1	1	0	70	0	2	0	0	0	66	0	0	0	73	0
17:30:00	124	2	2780	61	115	0	1	0	71	1	2	0	0	0	67	1	0	0	73	0
17:45:00	126	2	2842	62	117	2	1	0	72	1	2	0	0	0	67	0	0	0	75	2
18:00:00	127	1	2897	55	117	0	1	0	72	0	2	0	0	0	67	0	0	0	76	1
18:15:00	128	1	2938	41	118	1	1	0	72	0	2	0	0	0	67	0	0	0	76	0
18:30:00	131	3	2979	41	122	4	1	0	72	0	2	0	0	0	67	0	0	0	79	3
18:45:00	132	1	3030	51	122	0	1	0	72	0	2	0	0	0	67	0	0	0	84	5
19:00:00	134	2	3071	41	123	1	1	0	72	0	2	0	0	0	67	0	0	0	88	4
19:15:00	134	0	3071	0	123	0	1	0	72	0	2	0	0	0	67	0	0	0	88	0
19:15:15	134	0	3071	0	123	0	1	0	72	0	2	0	0	0	67	0	0	0	88	0

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 15-Aug-24 Site #: 2414000001

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Heavys - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1
7:30:00	2	2	1	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	2	1
7:45:00	4	2	1	0	2	1	1	0	0	0	0	0	0	0	0	0	0	0	2	0
8:00:00	5	1	1	0	3	1	1	0	0	0	0	0	0	0	0	0	0	0	2	0
8:15:00	7	2	1	0	4	1	1	0	0	0	0	0	0	0	0	0	0	0	3	1
8:30:00	9	2	1	0	6	2	1	0	0	0	0	0	0	0	0	0	0	0	5	2
8:45:00	10	1	2	1	7	1	1	0	0	0	0	0	0	0	0	0	0	0	6	1
9:00:00	12	2	2	0	9	2	1	0	0	0	0	0	0	0	0	0	0	0	11	5
9:15:00	12	0	2	0	9	0	1	0	0	0	0	0	0	0	0	0	0	0	15	4
9:30:00	12	0	2	0	11	2	1	0	0	0	0	0	0	0	0	0	0	0	16	1
9:45:00	14	2	3	1	11	0	1	0	0	0	0	0	0	0	0	0	0	0	17	1
10:00:00	17	3	3	0	13	2	1	0	0	0	0	0	0	0	0	0	0	0	22	5
10:15:00	17	0	3	0	16	3	1	0	0	0	0	0	0	0	0	0	0	0	27	5
10:30:00	18	1	3	0	17	1	1	0	0	0	0	0	0	0	0	0	0	0	30	3
10:45:00	20	2	3	0	17	0	1	0	0	0	0	0	0	0	0	0	0	0	33	3
11:00:00	22	2	3	0	18	1	1	0	0	0	0	0	0	0	0	0	0	0	39	6
11:15:00	24	2	3	0	18	0	1	0	0	0	0	0	0	0	0	0	0	0	41	2
11:30:00	24	0	3	0	18	0	1	0	0	0	0	0	0	0	0	0	0	0	47	6
11:45:00	28	4	3	0	25	7	1	0	0	0	0	0	0	0	0	0	0	0	51	4
12:00:00	29	1	3	0	27	2	1	0	0	0	0	0	0	0	0	0	0	0	55	4
12:15:00	31	2	3	0	28	1	1	0	0	0	0	0	0	0	0	0	0	0	72	17
12:30:00	31	0	3	0	35	7	1	0	0	0	0	0	0	0	0	0	0	0	80	8
12:45:00	33	2	3	0	36	1	1	0	0	0	0	0	0	0	0	0	1	1	97	17
13:00:00	36	3	3	0	45	9	1	0	0	0	0	0	0	0	0	0	1	0	103	6
13:15:00	37	1	3	0	48	3	1	0	0	0	0	0	0	0	0	0	1	0	106	3
13:30:00	40	3	3	0	50	2	1	0	0	0	0	0	0	0	0	0	1	0	110	4
13:45:00	41	1	3	0	53	3	1	0	0	0	0	0	0	0	0	0	1	0	113	3
14:00:00	45	4	3	0	57	4	1	0	0	0	0	0	0	0	0	0	1	0	113	0
14:15:00	49	4	4	1	57	0	1	0	0	0	0	0	0	0	0	0	1	0	120	7
14:30:00	49	0	4	0	59	2	1	0	0	0	0	0	0	0	0	0	1	0	135	15
14:45:00	49	0	4	0	61	2	1	0	0	0	0	0	0	0	0	0	1	0	144	9
15:00:00	50	1	4	0	61	0	1	0	0	0	0	0	0	0	0	0	1	0	145	1
15:15:00	51	1	4	0	62	1	1	0	0	0	0	0	0	0	0	0	1	0	149	4
15:30:00	51	0	4	0	64	2	1	0	0	0	0	0	0	0	0	0	1	0	150	1
15:45:00	53	2	4	0	66	2	1	0	0	0	0	0	0	0	0	0	1	0	150	0
16:00:00	55	2	4	0	66	0	1	0	0	0	0	0	0	0	0	0	1	0	152	2
16:15:00	58	3	4	0	68	2	1	0	0	0	0	0	0	0	0	0	1	0	154	2
16:30:00	58	0	5	1	68	0	1	0	0	0	0	0	0	0	0	0	1	0	156	2
16:45:00	58	0	5	0	71	3	1	0	0	0	0	0	0	0	0	0	1	0	157	1

Accu-Traffic Inc.
Traffic Monitoring & Data Analysis

Accu-Traffic Inc.

Count Date: 15-Aug-24 Site #: 2414000001

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Heavys - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
17:00:00	58	0	5	0	72	1	1	0	0	0	0	0	0	0	0	0	1	0	160	3
17:15:00	60	2	5	0	73	1	1	0	0	0	0	0	0	0	0	0	1	0	162	2
17:30:00	61	1	5	0	75	2	1	0	0	0	0	0	0	0	0	0	1	0	162	0
17:45:00	61	0	5	0	75	0	1	0	0	0	0	0	0	0	0	0	1	0	167	5
18:00:00	61	0	5	0	80	5	1	0	0	0	1	1	0	0	0	0	1	0	168	1
18:15:00	61	0	5	0	81	1	1	0	0	0	1	0	0	0	0	0	1	0	168	0
18:30:00	61	0	5	0	86	5	1	0	0	0	1	0	0	0	0	0	1	0	176	8
18:45:00	61	0	5	0	87	1	1	0	0	0	1	0	0	0	0	0	1	0	189	13
19:00:00	63	2	5	0	88	1	1	0	0	0	1	0	0	0	0	0	1	0	192	3
19:15:00	63	0	5	0	88	0	1	0	0	0	1	0	0	0	0	0	1	0	192	0
19:15:15	63	0	5	0	88	0	1	0	0	0	1	0	0	0	0	0	1	0	192	0

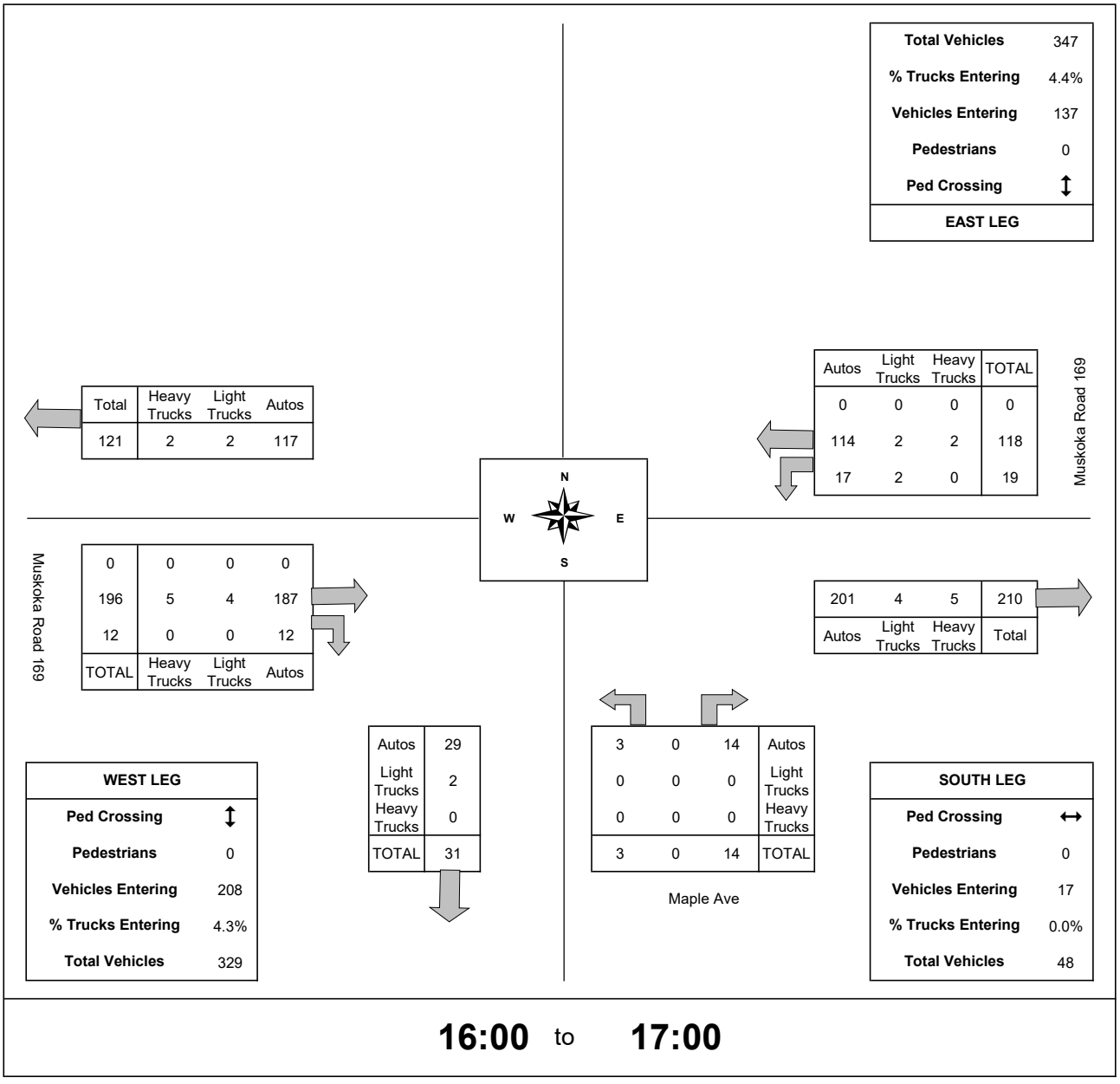
TATHAM ENGINEERING

INTERSECTION COUNT
PM PEAK HOUR

GENERAL INFORMATION

Surveyor Name	MJB	**Jurisdiction/Date**	Bala	16 April 2026
Weather Conditions	Light Rain/Overcast	**Major Street**	Muskoka Road 169	E-W
Project Name	1011 Maple Avenue	**Minor Street**	Maple Ave	N-S
Project Number	426024	**Intersection Control**	stop control on minor street	

Additional Comments



EAST LEG	
Total Vehicles	347
% Trucks Entering	4.4%
Vehicles Entering	137
Pedestrians	0
Ped Crossing	↕

Total	Heavy Trucks	Light Trucks	Autos
121	2	2	117

Autos	Light Trucks	Heavy Trucks	TOTAL
0	0	0	0
114	2	2	118
17	2	0	19

0	0	0	0
196	5	4	187
12	0	0	12
TOTAL	Heavy Trucks	Light Trucks	Autos

201	4	5	210
Autos	Light Trucks	Heavy Trucks	Total

Autos	29
Light Trucks	2
Heavy Trucks	0
TOTAL	31

3	0	14	Autos
0	0	0	Light Trucks
0	0	0	Heavy Trucks
3	0	14	TOTAL

WEST LEG	
Ped Crossing	↕
Pedestrians	0
Vehicles Entering	208
% Trucks Entering	4.3%
Total Vehicles	329

SOUTH LEG	
Ped Crossing	↔
Pedestrians	0
Vehicles Entering	17
% Trucks Entering	0.0%
Total Vehicles	48

16:00 to **17:00**

Appendix B:
Level of Service Definitions

TATHAM ENGINEERING

Level of Service – Unsignalized Intersections

Level of Service (LOS) for unsignalized intersections is defined in terms of control delay for each critical lane. Control delay includes initial deceleration, queue move-up time, stopped delay and final acceleration delay, and is a function of the service rate or capacity of the approach and degree of saturation.

The following table describes in detail the characteristics of each level of service, with A being the best and F being the worst.

LOS	EXPECTED DELAY TO STREET TRAFFIC	DELAY (sec/veh)
A	Little or no delays	$0 < d \leq 10$
B	Short traffic delays	$10 < d \leq 15$
C	Average traffic delays	$15 < d \leq 25$
D	Long traffic delays	$25 < d \leq 35$
E	Very long traffic delays	$35 < d \leq 50$
F	Extreme delays with queuing which may cause congestion affecting other traffic movements in the intersection	$50 < d$

source: 2010 Highway Capacity Manual

TATHAM ENGINEERING

Level of Service – Signalized Intersections

Level of Service (LOS) for signalized intersections is defined in terms of delay, which is made up of a number of factors that relate to control, geometrics, traffic and incidents. Only the portion of total delay attributed to the control facility is quantified. This control delay includes initial deceleration, queue move-up time, stopped delay and final acceleration delay.

The following table describes in detail the characteristics of each level of service, with A being the best and F being the worst.

LOS	EXPECTED DELAY TO STREET TRAFFIC	DELAY (sec/veh)
A	This level of service occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all at this LOS. Short cycle lengths may also contribute to low delay.	$0 < d \leq 10$
B	This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop at this level than at LOS A, causing longer average delays.	$10 < d \leq 20$
C	These higher delays may result from fair progression, longer cycle length, or both. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant, though many still pass through the intersection without stopping.	$20 < d \leq 35$
D	At this level, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavourable progression, long cycle lengths, or high volume to capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures become noticeable.	$35 < d \leq 55$
E	This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.	$55 < d \leq 80$
F	At this level, oversaturation occurs when arrival flow rates exceed the design capacity of the intersection. It may also occur at high v/c ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing factors to such high delay levels. LOS F is considered to be unacceptable to most drivers.	$80 < d$

source: 2010 Highway Capacity Manual

Appendix C:
Existing Operations



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	252	3	14	286	12	19
Future Volume (Veh/h)	252	3	14	286	12	19
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	283	3	16	321	13	21
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			286		638	285
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			286		638	285
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		97	97
cM capacity (veh/h)			1276		436	754

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	286	337	34
Volume Left	0	16	13
Volume Right	3	0	21
cSH	1700	1276	589
Volume to Capacity	0.17	0.01	0.06
Queue Length 95th (m)	0.0	0.3	1.4
Control Delay (s/veh)	0.0	0.5	11.5
Lane LOS		A	B
Approach Delay (s/veh)	0.0	0.5	11.5
Approach LOS			B

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	36.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	11	9	304	268	3
Future Volume (Veh/h)	5	11	9	304	268	3
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	5	11	9	313	276	3
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	609	278	279			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	609	278	279			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	99	99			
cM capacity (veh/h)	455	761	1284			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	16	322	279
Volume Left	5	9	0
Volume Right	11	0	3
cSH	629	1284	1700
Volume to Capacity	0.03	0.00*	0.16
Queue Length 95th (m)	0.6	0.2	0.0
Control Delay (s/veh)	10.9	0.3	0.0
Lane LOS	B	A	
Approach Delay (s/veh)	10.9	0.3	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	33.3%	ICU Level of Service	A
Analysis Period (min)	15		

* Value less than 0.01.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	374	12	19	343	3	14
Future Volume (Veh/h)	374	12	19	343	3	14
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	430	14	22	394	3	16
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			444		875	437
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			444		875	437
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		99	97
cM capacity (veh/h)			1116		313	620

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	444	416	19
Volume Left	0	22	3
Volume Right	14	0	16
cSH	1700	1116	537
Volume to Capacity	0.26	0.02	0.04
Queue Length 95th (m)	0.0	0.5	0.8
Control Delay (s/veh)	0.0	0.6	12.0
Lane LOS		A	B
Approach Delay (s/veh)	0.0	0.6	12.0
Approach LOS			B

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	43.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	7	19	7	368	381	11
Future Volume (Veh/h)	7	19	7	368	381	11
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	7	20	7	391	405	12
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	816	411	417			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	816	411	417			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	97	99			
cM capacity (veh/h)	344	641	1142			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	27	398	417
Volume Left	7	7	0
Volume Right	20	0	12
cSH	524	1142	1700
Volume to Capacity	0.05	0.00*	0.25
Queue Length 95th (m)	1.2	0.1	0.0
Control Delay (s/veh)	12.2	0.2	0.0
Lane LOS	B	A	
Approach Delay (s/veh)	12.2	0.2	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	35.0%	ICU Level of Service	A
Analysis Period (min)	15		

* Value less than 0.01.

Appendix D:
Future Operations

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	307	3	14	348	12	19
Future Volume (Veh/h)	307	3	14	348	12	19
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	345	3	16	391	13	21
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			348		770	347
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			348		770	347
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		96	97
cM capacity (veh/h)			1211		364	697

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	348	407	34
Volume Left	0	16	13
Volume Right	3	0	21
cSH	1700	1211	516
Volume to Capacity	0.20	0.01	0.07
Queue Length 95th (m)	0.0	0.3	1.6
Control Delay (s/veh)	0.0	0.4	12.5
Lane LOS		A	B
Approach Delay (s/veh)	0.0	0.4	12.5
Approach LOS			B

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	39.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	11	9	370	327	3
Future Volume (Veh/h)	5	11	9	370	327	3
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	5	11	9	381	337	3
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	738	339	340			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	738	339	340			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	98	99			
cM capacity (veh/h)	383	704	1219			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	16	390	340
Volume Left	5	9	0
Volume Right	11	0	3
cSH	558	1219	1700
Volume to Capacity	0.03	0.00*	0.20
Queue Length 95th (m)	0.7	0.2	0.0
Control Delay (s/veh)	11.6	0.3	0.0
Lane LOS	B	A	
Approach Delay (s/veh)	11.6	0.3	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	36.7%	ICU Level of Service	A
Analysis Period (min)	15		

* Value less than 0.01.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	456	12	19	419	3	14
Future Volume (Veh/h)	456	12	19	419	3	14
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	524	14	22	482	3	16
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			538		1057	531
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			538		1057	531
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		99	97
cM capacity (veh/h)			1030		244	548

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	538	504	19
Volume Left	0	22	3
Volume Right	14	0	16
cSH	1700	1030	458
Volume to Capacity	0.32	0.02	0.04
Queue Length 95th (m)	0.0	0.5	1.0
Control Delay (s/veh)	0.0	0.6	13.2
Lane LOS		A	B
Approach Delay (s/veh)	0.0	0.6	13.2
Approach LOS			B

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	47.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	7	19	7	449	464	11
Future Volume (Veh/h)	7	19	7	449	464	11
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	7	20	7	478	494	12
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	992	500	506			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	992	500	506			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	96	99			
cM capacity (veh/h)	271	571	1059			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	27	485	506
Volume Left	7	7	0
Volume Right	20	0	12
cSH	443	1059	1700
Volume to Capacity	0.06	0.00*	0.30
Queue Length 95th (m)	1.5	0.2	0.0
Control Delay (s/veh)	13.6	0.2	0.0
Lane LOS	B	A	
Approach Delay (s/veh)	13.6	0.2	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	39.2%	ICU Level of Service	A
Analysis Period (min)	15		

* Value less than 0.01.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	307	6	15	348	23	23
Future Volume (Veh/h)	307	6	15	348	23	23
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	345	7	17	391	26	26
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			352		774	349
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			352		774	349
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		93	96
cM capacity (veh/h)			1207		362	695

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	352	408	52
Volume Left	0	17	26
Volume Right	7	0	26
cSH	1700	1207	476
Volume to Capacity	0.21	0.01	0.11
Queue Length 95th (m)	0.0	0.3	2.8
Control Delay (s/veh)	0.0	0.5	13.5
Lane LOS		A	B
Approach Delay (s/veh)	0.0	0.5	13.5
Approach LOS			B

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	33	16	370	327	3
Future Volume (Veh/h)	5	33	16	370	327	3
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	5	34	16	381	337	3
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	752	339	340			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	752	339	340			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	95	99			
cM capacity (veh/h)	373	704	1219			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	39	397	340
Volume Left	5	16	0
Volume Right	34	0	3
cSH	632	1219	1700
Volume to Capacity	0.06	0.01	0.20
Queue Length 95th (m)	1.5	0.3	0.0
Control Delay (s/veh)	11.1	0.5	0.0
Lane LOS	B	A	
Approach Delay (s/veh)	11.1	0.5	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	456	21	22	419	9	16
Future Volume (Veh/h)	456	21	22	419	9	16
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	524	24	25	482	10	18
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			548		1068	536
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			548		1068	536
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		96	97
cM capacity (veh/h)			1021		239	545

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	548	507	28
Volume Left	0	25	10
Volume Right	24	0	18
cSH	1700	1021	374
Volume to Capacity	0.32	0.02	0.07
Queue Length 95th (m)	0.0	0.6	1.8
Control Delay (s/veh)	0.0	0.7	15.4
Lane LOS		A	C
Approach Delay (s/veh)	0.0	0.7	15.4
Approach LOS			C

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	50.0%	ICU Level of Service	A
Analysis Period (min)	15		

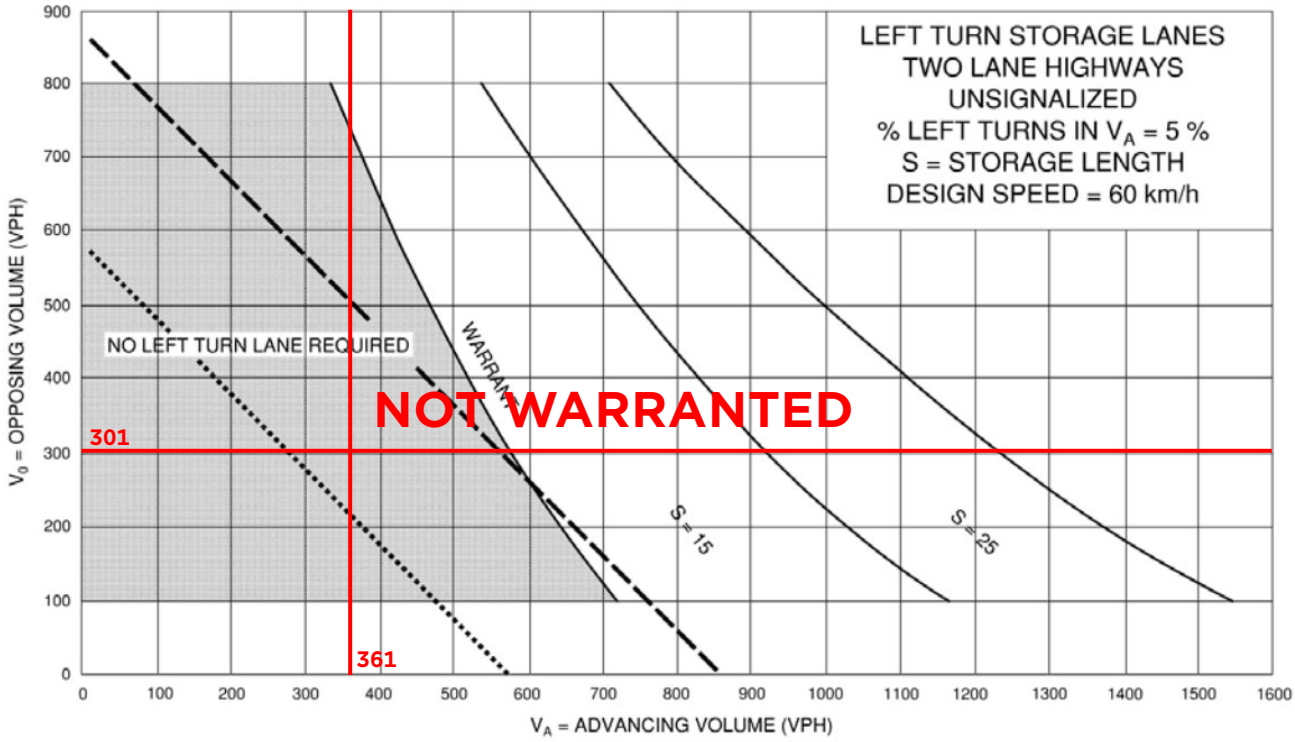


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	7	29	26	449	464	11
Future Volume (Veh/h)	7	29	26	449	464	11
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	7	31	28	478	494	12
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1034	500	506			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1034	500	506			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	95	97			
cM capacity (veh/h)	250	571	1059			

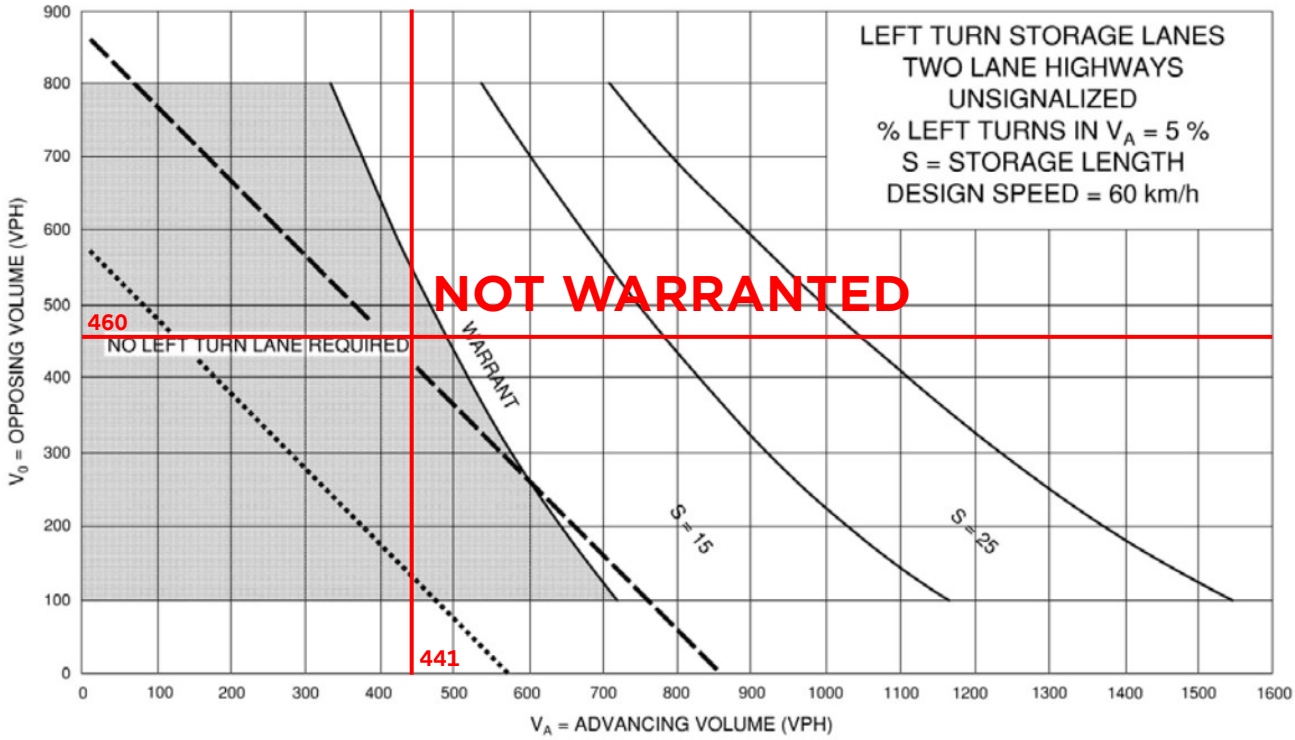
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	38	506	506
Volume Left	7	28	0
Volume Right	31	0	12
cSH	462	1059	1700
Volume to Capacity	0.08	0.03	0.30
Queue Length 95th (m)	2.0	0.6	0.0
Control Delay (s/veh)	13.5	0.8	0.0
Lane LOS	B	A	
Approach Delay (s/veh)	13.5	0.8	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	54.9%	ICU Level of Service	A
Analysis Period (min)	15		

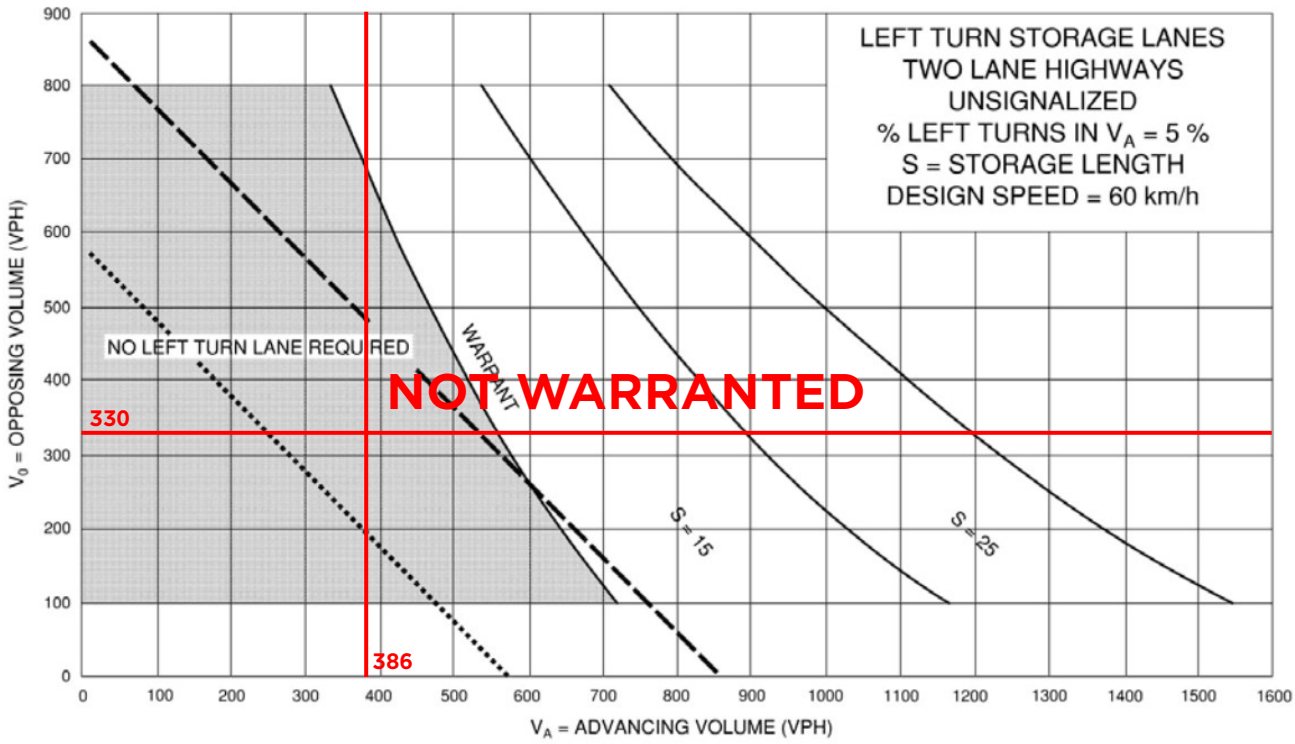
Appendix E:
Left Turn Lane Warrants



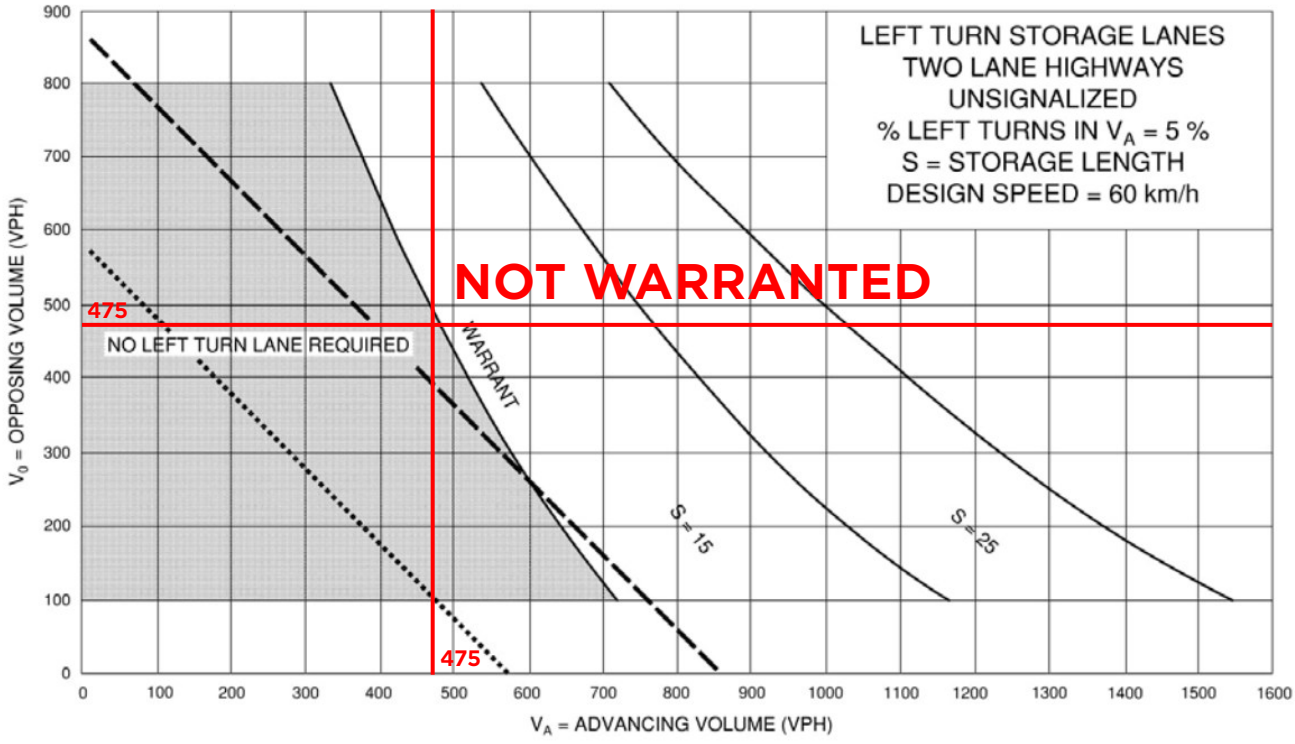
Weekday AM Peak Hour



Weekday PM Peak Hour



Weekday AM Peak Hour



Weekday PM Peak Hour

1 Bailey Street
Port Carling, ON P0B 1J0
E: planning@muskokalakes.ca P: 705-765–3156 F: 705-765-6755

PLANNING COMMITTEE
NOTICE OF PUBLIC MEETING & COMPLETE APPLICATION
THE CORPORATION OF THE TOWNSHIP OF MUSKOKA LAKES

Take notice that the Council for the Corporation of the Township of Muskoka Lakes will be considering an application for a proposed Amendment to Zoning By-law 2014-14 pursuant to Section 34 of the Planning Act, R.S.O., 1990, Chapter P. 13, as amended. **This notice has been sent to you for information and does not require any response unless you wish to make one.**

File No.: ZBA-35/25
Roll No.: 4-25-040-10
By-law No.: To Be Assigned

Owners:	Claire and Tyler MacNamara
Address:	2 Island J2
Description:	Part 2, Plan 35R24302, Eagle Island (Medora)
Zoning:	Waterfront Residential (WR4) Lake Joseph (Category 1 Lake) Schedule: 20
Meeting Date: Thursday, June 11, 2026 at 9:00 a.m.	

Take further notice that this public meeting will be held in a hybrid forum with electronic Zoom participation, and in-person format for those wishing to attend in-person. The meeting will be held in the **Council Chambers, Municipal Office, 1 Bailey Street, Port Carling, ON**. Should you wish to view an electronic copy of the Notice of Public Meeting for the above-noted application, please visit https://www.muskokalakes.ca/planning-notices/ or scan the QR code. Please note there may be a delay when the physical notice signs are posted and when the electronic copy of the Notice is available online.

Explanation of the Purpose and Effect:
A Zoning By-law Amendment Application has been submitted permit the construction of a single storey boathouse and associated dock and permit an as-built swim dock which will exceed the maximum permitted cumulative width requirements. The application also proposes to permit an as-built sport court to be located closer to the high water mark than permitted.

The proposed draft by-law will also have the effect of repealing site specific zoning by-law 2021-061 and carrying forward the relevant sections. By-law 2021-061 defines and permits a dining hall on the subject property. The owners no long wish to construct the approved dining hall. By-law 2021-061 permits a sleeping cabin to be located on the second storey of a boathouse on a property with two dwelling units. The applicants are proposing to carry this permission forward as part of the proposed draft by-law. By-law 2021-061 restricts shoreline structures to the envelope shown hatched on Schedule II. The current application proposes the construction of a new single storey boathouse and associated dock on the north side of the island. This provision is proposed to be replaced by the proposed dock and boathouse configuration proposed through the current application. By-law 2021-061 also repealed Section 1. ii) of By-law 2012-149. The proposed draft by-law proposes to carry this forward. Section 1. ii) of By-law 2012-149 approved a different

shoreline structure envelope in a similar location where the dock and boathouse are currently proposed.

Exemption	ZBL 2014-14 Section(s)	Description	Permitted	Proposed	Relief	Proposal
A	3.23.3	Setback from the High Water Mark – Sport Court	200 ft.	152 ft.	48 ft.	Permit an as-built sport court
B	4.1.7 & 4.1.7.12 a)	Maximum Permitted Cumulative Dock Width	75 ft.	141 ft.	66 ft.	Construct a dock and single storey boathouse and recognize as-built swim dock
C	4.1.7 & 4.1.7.12 a) & c)	Maximum Permitted Cumulative Single Storey Boathouse Width	75 ft.	120.5 ft.	45.5 ft.	
D	Site Specific By-law 2021-061	Repeal By-law 2021-061 and Carry Forward Relevant Section in Proposed Draft By-law	-	-	-	Permit One Sleeping Cabin on a Lot That Contains Two Dwellings and Repeal Section 1.ii) of By-law 2012-149

A key map of the subject property, the applicant's site plan and any drawing, and a draft By-law are included in this notice.

For more information, please contact the Planning Division weekdays between 8:15 a.m. and 4 p.m. at the Municipal Office, or at planning@muskokalakes.ca or by phone at (705) 765-3156. **Please quote the file number noted above.**

How to Participate:

Submit Comments in Writing



If you wish to provide a response to this application, please submit comments to planning@muskokalakes.ca, deliver in-person, or mail to P.O. Box 129, 1 Bailey Street, Port Carling, ON, P0B 1J0. For correspondence to be included on the agenda, please submit your comments by: **June 4, 2026.**

Please note that comments can still be submitted after the agenda has been published. Personal information collected in response to this Notice of Public Meeting will be used to assist staff and Council to process this application and will be made public.

Active Participation In-Person or on Zoom



Hybrid meetings are held at 9:00 a.m. on the above-noted meeting date in Council Chambers at the Municipal Office. For more information about participating, please visit www.muskokalakes.ca/speaking-at-a-meeting

Watch the Meeting Online



You can access the meeting from YouTube on the Township of Muskoka Lakes YouTube Channel. If the live webcast fails, the meeting recording will be posted under the Government Portal on www.muskokalakes.ca

FAILURE TO PARTICIPATE IN MEETING: If you do not participate in the meeting it may proceed in your absence and, except as otherwise provided in the Planning Act, you will not be entitled to any further notice in the proceedings.

REQUIREMENT FOR OWNERS OF MULTI-TENANT BUILDINGS: Upon receiving this Notice, owners of multi-tenant buildings with seven (7) or more residential units are asked to post this Notice in a location that is clearly visible to all tenants (i.e. building or community notice board), in accordance with O.Reg 545/06.

NOTICE OF PASSING & APPEALS: If you wish to be notified of the decision of the Council of the Township of Muskoka Lakes in respect to this application, you must make a written request to planning@muskokalakes.ca.

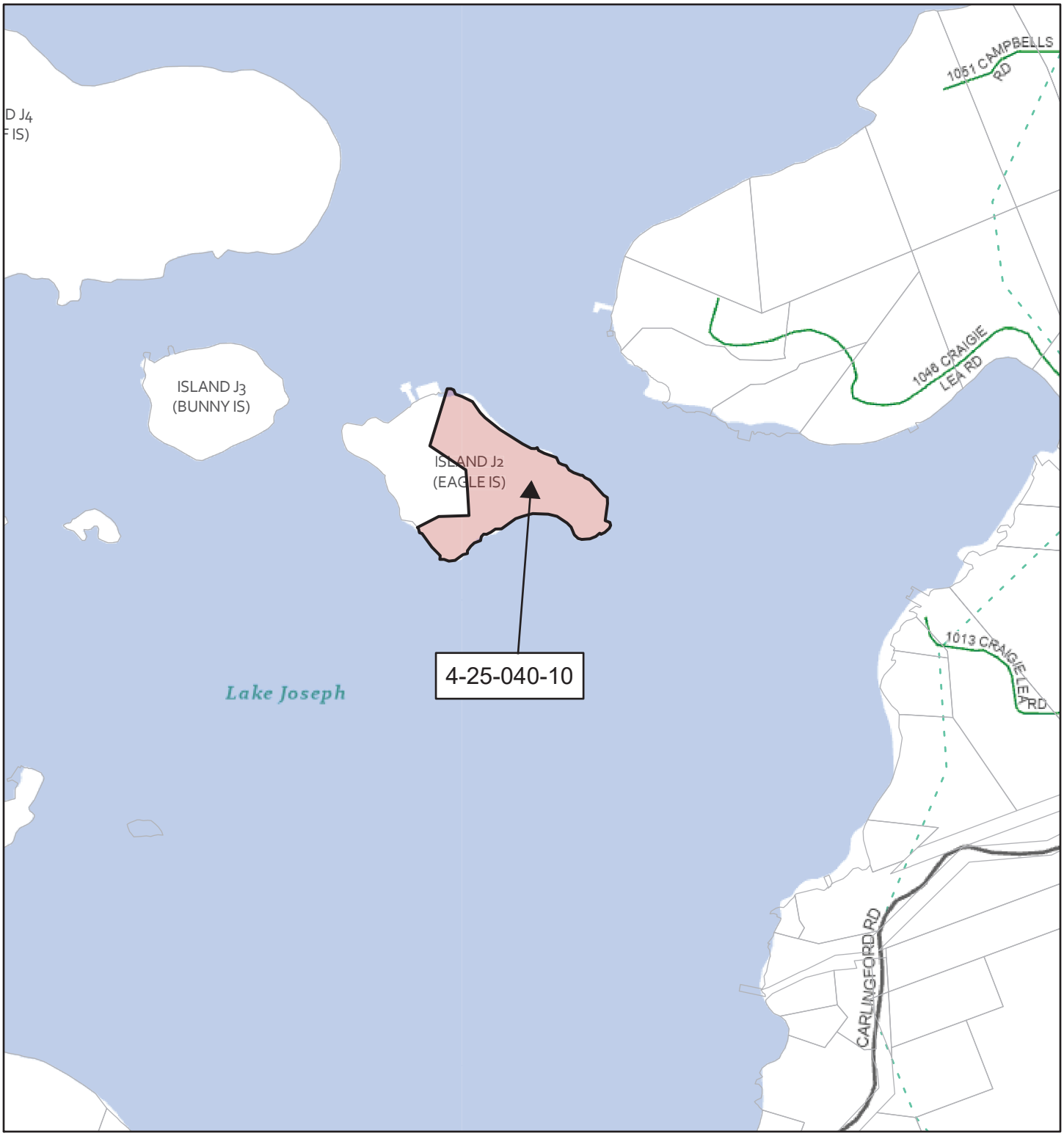
Furthermore, if a person or public body would otherwise have an ability to appeal the decision of the Council of the Township of Muskoka Lakes to the Ontario Land Tribunal but the person or public body does not make oral submissions at a public meeting or make written submissions to the Township of Muskoka Lakes before the by-law is passed, the person or public body is not entitled to appeal the decision. The person or public body may not be added as a party to the hearing of an appeal before the Ontario Land Tribunal unless, in the opinion of the Tribunal, there are reasonable grounds to do so.

Notwithstanding the above, subsection 34(19) of the Planning Act defines the parties that are eligible to appeal the decision to the Ontario Land Tribunal.

Dated at the Township of Muskoka Lakes this 21st day of May, 2026.

Crystal Best-Sararas, Clerk
Corporation of the Township of Muskoka Lakes

KEY MAP (ZBA-35/25)



NOT A PLAN OF SURVEY. FOR INFORMATIONAL PURPOSES ONLY.

1:10,511

0 0.05 0.1 0.2 mi

0 0.1 0.2 0.4 km

Parcel: Assessment
District Municipality
Area Municipality
Geographic Township

Road Network
Township
Private

Wetland With Significance
Evaluated-Provincial

Evaluated-Other
Waterbody
Major Lake

Canada_Hillshade
World_Hillshade

Sources: NRCan, Esri Canada, and Canadian Community Maps contributors., Esri, NASA, NGA, USGS, FEMA

Staff Report PLAN-2026-082
Planning Committee
June 11, 2026

TO: **Chair Bosomworth and Members of Planning Committee**

AUTHOR: **Kaitlyn Walker, Intermediate Planner**

SUBJECT: **ZBA-35/25 (MACNAMARA), Part 2, Plan 35R24302, Eagle Island (Medora), Civic Address: 2 Island J2, Roll #: 4-25-040-10**

RECOMMENDATION

THAT Zoning By-law Amendment Application ZBA-35/26 (MACNAMARA), be APPROVED.

AND THAT the proposed development be made subject to Site Plan Control.

REPORT HIGHLIGHTS

This report provides an overview and analysis of Zoning By-law Amendment Application ZBA-35/26 (MACNAMARA). Through policy analysis, a site visit, and desktop review of available information, staff have concluded that the application to:

- Permit the construction of a single storey boathouse and associated dock and permit an as-built swim dock which will exceed the maximum permitted cumulative width requirements;
- Permit an as-built sport court to be within the required setback to the high water mark; and,
- Repeal site specific Zoning By-law 2021-061 and carry forward the relevant sections of By-law 2021-061;

is consistent with the Provincial Planning Statement and is in conformity with the Muskoka Official Plan, and the Township's Official Plans.

BACKGROUND

The purpose and effect of proposed Zoning By-law Amendment Application ZBA-35/25 is to permit the construction of a single storey boathouse with associated dock and permit an as-built swim dock which exceeds the maximum permitted cumulative width requirements. The application also proposes to permit an as-built sport court to be located closer to the high water mark than permitted.

The proposed draft by-law will also have the effect of repealing site specific zoning by-law 2021-061 and carrying forward the relevant sections. By-law 2021-061 defines and permits a dining hall on the subject property. The owners no longer wish to construct the approved dining hall and therefore this permission will be repealed. By-law 2021-061 permits a sleeping cabin to be located on the second storey of a boathouse on a property with two dwelling units. The applicants are proposing to carry this permission forward as part of the proposed draft by-law. By-law 2021-061 restricts shoreline structures to the envelope shown hatched on Schedule II and this provision is to be brought forward but amended to reflect the proposed construction of a new single storey boathouse and associated dock on the north side of the island. By-law 2021-061 also repealed Section 1. ii) of By-law 2012-149. Section 1. ii) of By-law 2012-149 approved a different shoreline structure envelope that is no longer proposed. The proposed draft by-law will carry forward the repealing of Section 1. ii of By-law 2012-149.

Technical details of the application are summarized in Table 1 below.

Table 1: Summary of Necessary Exemptions

Exemption	ZBL 2014-14 Section(s)	Description	Permitted	Proposed	Relief	Proposal
A	3.23.3	Setback from the High Water Mark – Sport Court	200 ft.	152 ft.	48 ft.	Permit an as-built sport court
B	4.1.7 & 4.1.7.12 a)	Maximum Permitted Cumulative Dock Width	75 ft.	141 ft.	66 ft.	Construct a dock and single storey boathouse and recognize as-built swim dock
C	4.1.7 & 4.1.7.12 a) & c)	Maximum Permitted Cumulative Single Storey Boathouse Width	75 ft.	120.5 ft.	45.5 ft.	
D	Site Specific By-law 2021-061	Repeal By-law 2021-061 and Carry Forward Relevant Section in Proposed Draft By-law	-	-	-	Permit One Sleeping Cabin on a Lot That Contains Two Dwellings and Repeal Section 1.ii) of By-law 2012-149

The site specific property detailed are outlined in Table 2 below.

Table 2: Site Specific Property Details

Matter	Comment
Official Plan Designation (November 2023 Consolidation)	Waterfront Area
Official Plan Designation (April 2013 Consolidation)	Waterfront
Zoning (ZBL 2014-14, as amended)	Waterfront Residential (WR4)
Zoning Schedule	20
Lot Frontage	± 619 feet
Lot Area	± 246,590 sq. ft. (5.66 acres)
Access	Water Access
Servicing	Lake Water/Septic
Abutting Zoning Categories	Waterfront Residential (WR4)
Original Shore Road Allowance	N/A
Lake/River Category	1 (Lake Joseph)
Site Plan Control	Waterfront Residential (WR4) zone is automatically subject to Site Plan Control, however, the proposed shoreline structures and as-built sport court are exempt.

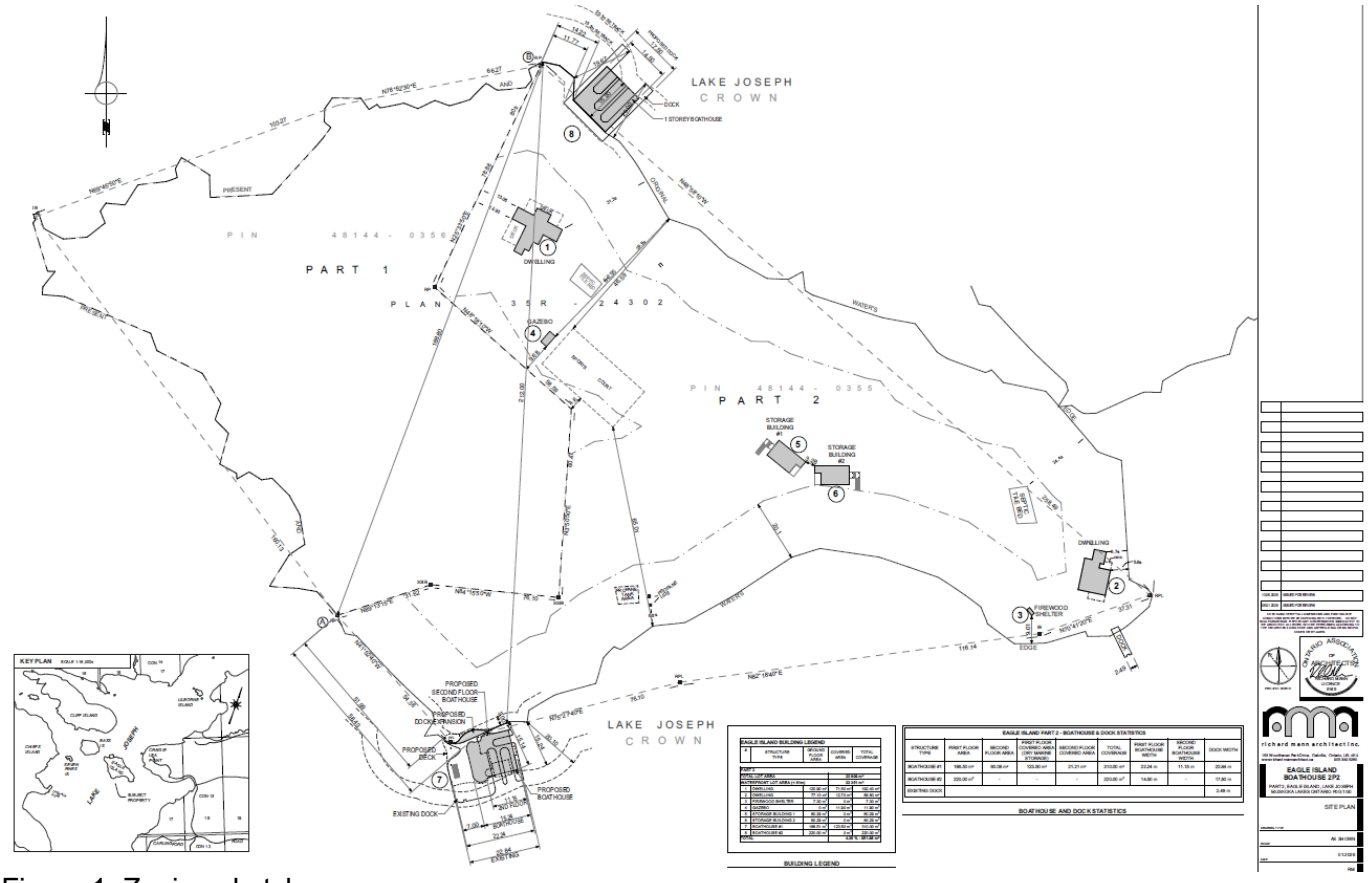


Figure 1: Zoning sketch.

ANALYSIS

Official Plans

The application was reviewed based on the policies in effect at the time of the application was deemed complete. At the time that the subject application was deemed complete, parts of the Township's 2023 Official Plan were under appeal. Where relevant policies were under appeal and such policies were not yet in effect, staff refer to applicable policies of the Township's 2013 Official Plan.

Public Consultation

Notice of this public meeting to be held under the Planning Act for this application was circulated 21 days in advance of this scheduled June, 11, 2026 meeting date and 5 written departmental comments have been received at the time of writing (see Table A3 below). No concerns had been received at the time of writing. Any written comments received up to June, 4, 2026 will be attached to Committee's Agenda under Section 16.

Fish Habitat Assessment

A Fish Habitat Evaluation, completed by Krystawyn Consulting, dated August 2025 was submitted with the application. Ministry of Natural Resources mapping indicates that the subject property has both Type 1 – Significant and Type II – General Fish Habitat with the majority of the northern shoreline being Type I. The Fish Habitat Evaluation investigated the nature of Type I Fish Habitat along the shoreline of the subject property and the potential impacts of the proposed dock and boathouse location with recommendations to avoid or mitigate potential impacts. A site investigation completed by Krystawyn Consulting confirmed a lack of Type I fish habitat attributes at the proposed dock and boathouse location with fish habitat features being situated east of the proposed structure. The assessment concludes that no significant environmental impact is anticipated as a result of the proposed shoreline structures. The report also includes a number of mitigation measures to further avoid any potential impacts, in-particular construction mitigation measures that can be taken to avoid the introduction of sediment to the lake. Staff would recommend that the proposed shoreline structure development be made subject to Site Plan Control to ensure the recommendations of the Fish Habitat Evaluation are implemented.

Proposed Exemption A – Setback from the High Water Mark – Sport Court

Planning staff have no concerns with the approval of the requested exemption. In making this determination, key considerations include the following:

- Policy B.5.13 of the Township's 2013 Official Plan identifies that land-based buildings and structures are required to be located at least 66 feet from the highwater mark of a waterbody with the exception of minor accessory structures, which may be subject to a reduced setback within the Township's Comprehensive Zoning By-law. Comprehensive Zoning By-law 2014-14 defines a sport court as a structure. In June 2020, Council passed By-law 2019-154, which amended the Township's Comprehensive Zoning By-law to require a 200-foot setback from the high-water mark for sport courts and recreational surfaces and to

specifically define sport courts and recreational surfaces. The as-built sport court is setback 152 feet from the high water mark.

- Policy B.16.2 of the Township's 2013 Official Plan further specifies that large open space uses, such as sport courts or any recreational activity area, shall not be permitted on small lots. Policy B 16.1 of the Township's 2013 Official Plan defines small lots as an individual property or island with less than 200 feet of frontage, and 1 acre in area. Section 4.1.3.10 of the Township's Comprehensive Zoning By-law prohibits sport courts and recreational surfaces on small lots, being lots with less than 200 ft. of frontage and 1 acre of lot area.

  The subject property is a large lot with a straight-line frontage of 619 feet and an area of 246,590 square feet (5.66 acres). The subject property does not qualify as a small lot in accordance with Policy B 16.1 of the Township's 2013 Official Plan.

- Numerous policies in the Township's 2013 Official Plan encourage shorelines to be maintained in a predominantly natural state with tree cover and ground vegetation extending across a property's shoreline to a target depth of 50 feet. Policy B.6.5 from the Township's 2013 Official Plan explains that the role of naturally vegetated shorelines in buffering waterbodies from erosion, siltation and nutrient migration is critical to the protection of water quality and supports improvements upon the natural state of shoreline buffers during redevelopment.

  In this case the subject property is very well vegetated and the as-built sport court is not visible from the lake. Further, the majority of the land based development on the subject property is very well buffered from lakeside views with the exception of dwelling number 2 which is partially visible.

- Due to the configuration of the property and its island location it is not possible to locate a sport court greater than 200 feet from the high water mark. While numerically the relief required is not insignificant (48 feet) staff have considered the visual impact of the sport court, potential impacts on privacy and noise. Due to the significant shoreline buffer on the subject property the sport court will not be visible from the lake. The sport court complies with the required 15 foot setback from the neighbouring property which staff understand is in the same ownership as the subject property. Staff therefore do not anticipate any negative privacy or noise concerns.

- Floodlighting and artificial lighting can impact the night sky if their use is intended at night. Policy L12 c) of the Township's 2023 Official Plan includes detailed requirements for exterior lighting with the intent of preserving the aesthetic quality of the night sky and the natural ecosystems in the area. Floodlighting and artificial lighting are particularly important considerations for sport courts, as the functional requirements of these spaces demand high-intensity illumination to ensure clear visibility of the playing surface. If Committee is considering approval of the application, staff have recommended that a Site Plan Agreement be entered into and registered on title, to address Dark Sky Compliant Lighting.

- Sport courts are generally comprised of large impermeable surfaces, and it is important to ensure that stormwater is appropriately managed. Installation of large

hardened/impermeable playing surfaces can potentially change drainage patterns and increase stormwater runoff.

If Committee is considering approval of the application, staff have recommended that a Stormwater Management Brief be prepared by a qualified professional and that it be implemented, as necessary, through the recommended Site Plan Agreement. Securities may be required and the Site Plan Agreement will be registered on title.

Proposed Exemptions B & C – Maximum Cumulative Dock & Single Storey Boathouse Width

Planning staff have no concerns with the approval of the requested exemptions. In making this determination, key considerations include the following:

- Section E4.3.3 d) of the Township's 2023 Official Plan directs that the maximum shoreline structure width permitted on a Category 1 Lake (Lake Joseph) is 25% of the lot frontage up to a maximum cumulative width of 75 feet, with boathouses subject to further restrictions. The further restrictions on boathouse width are implemented through the Township's Zoning By-law. The Township's Official Plan and Comprehensive Zoning By-law establish maximum widths with the general intent and purpose of controlling density and ensuring that built form does not dominate the shoreline

- The Township's Comprehensive Zoning By-law permits a maximum cumulative dock width of 25% and a maximum cumulative single storey boathouse width of 16% on Category 1 lakes (Lake Joseph), to a maximum of 75 feet.

- The applicants are proposing to construct a single storey boathouse and an associated dock on the north shoreline of the subject property. The proposed single storey boathouse (25 feet in height) will have a width of 47.6 feet. The proposed dock will have a width of 57.4 feet. There is also an existing as-built swim dock on the east point of the property which has a width of 8.2 feet. On the southern frontage there is an existing recently constructed dock (BP-2023-009) which is 75 feet wide. A two storey boathouse is approved to be located on the existing dock (BP-2026-0064) and will have a first storey width of 73 feet. Therefore the total cumulative dock width proposed is 140.5 feet and the total cumulative first storey boathouse width proposed is 120.5 feet.

- Policy B.13.4 of the Township's 2013 Official Plan allows for consideration of greater shoreline structure widths on large residential properties with severance potential. In this case the subject property would have severance potential and additional shoreline structure width can be contemplated.

- When considering the subject properties 619 feet of straight line frontage the proposed dock and single storey boathouse width result in 22.7% and 19.5% of the frontage respectively. However, the subject property has an actual/assessed frontage of 2099 feet. When considering the actual/accessed frontage the resulting cumulative dock and single storey boathouse width equates to 6.7% and 5.7%, respectively. Further, if the property was severed, the cumulative width of each frontage would not exceed the maximum width of 75 feet the Township's Official plan and Zoning By-law speak to.

- The approved two storey boathouse and its associated dock are located on the southern shoreline. The proposed single storey boathouse and its associated dock are located on the northern shoreline. Both boathouses will not be visible at the same time from the lake and will not result in built form dominating over the natural environment.

- The three (3) large lakes, Muskoka, Rosseau, and Joseph, generally exhibit larger built forms and building types which are generally not in character with the smaller lakes. In the opinion of staff, the proposed shoreline structures are in keeping with the character of Lake Joseph.

- Staff do recognize that the proposed single storey boathouse will have the appearance of a two storey boathouse due to is proposed height of 25 feet. Given the characteristics of the subject property discussed above, staff do not have concerns with the resulting built form. Further, staff have considered that the overall built form on the subject property only equates to 4.2% of lot coverage on the entire lot and 4.3% within 200 feet of the high water mark. This is considerably less than the 10% permitted by the Township's Zoning By-law.

Proposed Exemptions D – Repeal Site Specific By-law 2021-061

Planning staff have no concerns with repealing By-law 2021-061 and carrying forward its applicable Sections as requested by the owners through the proposed by-law. In making this determination, key considerations include the following:

- The proposed draft by-law will also have the effect of repealing site specific zoning by-law 2021-061 and carrying forward the relevant sections. By-law 2021-061 permits the following:
    - Permits a dining hall and sleeping cabin on lot with two dwellings;
    - Permits and defines dining hall;
    - Restricts exterior or interior changes to dining hall;
    - Defines permitted shoreline structure envelopes;
    - Repeals Section 1 ii) of By-law 2021-061

  The owners no longer wish to construct the approved dining hall and therefore no provisions related to a dining hall are proposed to be carried forward.

- By-law 2021-061 permits a sleeping cabin to be located on the second storey of a boathouse on a property with two dwelling units. Permits for the two storey boathouse have been issued and staff have no concerns with carrying this exemption forward to the proposed by-law.

- By-law 2021-061 restricts shoreline structures to the envelope shown hatched on Schedule II. The current application proposes the construction of a new single storey boathouse and associated dock on the north side of the island. This provision is to be replaced by the proposed dock and boathouse configuration proposed through the current application.

- By-law 2021-061 also repealed Section 1. ii) of By-law 2012-149. Section 1. ii) of By-law

2012-149 approved a different shoreline structure envelope in a similar location where the dock and boathouse are currently proposed. The proposed draft by-law proposes to carry forward the repealing of Section 1. ii) of By-law 2012-149 as it is no longer applicable. Staff have no concerns in this regard.

General Analysis

Site visit photos, property constraints and past planning approvals, and policy considerations are included in an appendix to this report.

PREPARATION

Original signed by K. Walker
Prepared By
Kaitlyn Walker
Intermediate Planner
Planning Division
(705) 765-3156 ext. 236
KWalker@muskokalakes.ca

Original signed by S. Stone
Acknowledged By
Steve Stone
Manager of Planning
(705) 765-3156 ext. 235
SStone@muskokalakes.ca

Original Signed by D. Pink
CAO Acknowledged
David Pink
Chief Administrative Officer
(705) 765-3156 ext. 230
DPink@muskokalakes.ca

APPENDIX

A1: Property Constraints

Matter	Comment
Species at Risk (SAR)	SAR may be encountered in the area. More information regarding SAR can be found at www.ontario.ca/SpeciesAtRisk. Property owners should consult the Ministry of the Environment Conservation, and Parks (MECP) to ensure any proposed development will not have any adverse impacts on SAR or SAR habitat. Given the applicant's statutory obligations under the *Endangered Species Act, 2007*, an evaluation of potential habitat of endangered and threatened species and impacts has not been completed, however, one can be requested by Committee if desired.
Deer Wintering Habitat	A review of available mapping indicates that the subject property is within a Stratum 2 Deer Wintering Area. Stratum 1 habitat is described as the core habitat where deer concentrate in mid-winter once snow depth generally exceeds 50cm and deer movement is restricted. Stratum 2 habitat generally surrounds Stratum 1 habitat. No tree removal is required for the proposed shoreline structures. Staff assume some tree removal was required to construct the as-built sport court. However, no other land based development is proposed at this time and the island is well treed. Given this consideration, staff have not requested an evaluation of the impacts to deer wintering habitat, although Committee can request one if desired.

A2: Site Visit Photos, May 27, 2025



Figure 1: Approximate location of the proposed single storey boathouse and associated dock.



Figure 2: Approximate location of the proposed single storey boathouse and associated dock and the northern shoreline.



Figure 3: Southern shoreline and existing dock and approved two storey boathouse.



Figure 4: As-built swim dock on eastern point of subject property.



Figure 5: Existing dock and future location of two storey boathouse (southern shoreline).



Figure 6: As-built sport court.



Figure 7: Existing dwelling #2.



Figure 8: Existing dwelling #1.



Figure 9: Existing storage buildings.



Figure 10: Example of shoreline buffer along subject property.

A3: Agency and Public Comments Submitted at Report Writing

Agency	No Objection	Objection	Comments
District Municipality of Muskoka	✓		District staff would not be opposed to the approval of the above noted application provided: That appropriate development control techniques are used to implement the recommendations of the Boathouse and Dock Fish Habitat Assessment prepared by Krystawyn Consulting, dated August 2025, respecting minimal vegetation removal, erosion and sediment and construction mitigation measures.
Township of Muskoka Lakes, Development Services Division	✓		No objections related to the building code.
Township of Muskoka Lakes, Operational Services	✓		No comments.
Township of Muskoka Lakes, Emergency Services	✓		No comments.
Township of Muskoka Lakes, Legislative Services	✓		No comments.
Public			
			No comments received at the time of writing.

A4: Planning Policy

Provincial Policy Statement
The Provincial Planning Statement, 2024 (PPS) provides policy direction on matters of provincial interest related to land use planning and development. The subject lands are identified as Rural Lands in the PPS and the application is consistent with applicable policies.
District of Muskoka Official Plan
The subject lands are designated Waterfront Area in the District of Muskoka Official Plan. The District Municipality of Muskoka has delegated consent granting authority under the Planning Act to the Township and is a commenting agency in regard to Provincial and District interests. District has no concerns with the application.
Township of Muskoka Lakes Official Plan (Approved April 2013)

The Township's 2013 Official Plan designates the subject lands as Waterfront and the application conforms with the applicable policies of this Plan.
Township of Muskoka Lakes Official Plan (Adopted October 12, 2022, Approved November 20, 2023)
The Township's 2023 Official Plan designates the subject lands as Waterfront Area and the application conforms with the applicable in force (un-appealed) policies of this Plan.

THE CORPORATION OF THE TOWNSHIP OF MUSKOKA LAKES

BY-LAW NUMBER 2026-XXX

Being a by-law to amend Comprehensive Zoning By-law 2014-24, as amended, in the Township of Muskoka Lakes

WHEREAS the authority to pass this by-law is provided by Section 34 of the Planning Act, R.S.O. 1990, Chapter P.13 and amendments thereto;

AND WHEREAS By-law 2014-14 was enacted by the Corporation of the Township of Muskoka Lakes to regulate land use within the Municipality;

AND WHEREAS the Council of the Corporation of the Township of Muskoka Lakes deems it advisable to further amend By-law 2014-14;

NOW THEREFORE THE COUNCIL OF THE CORPORATION OF THE TOWNSHIP OF MUSKOKA LAKES ENACTS AS FOLLOWS:

1. Section 12 of By-law 2014-14 is hereby further amended by the addition of the following subsection:

87-XXXX i) The lands affected by this amendment are described as Part 2, Plan 35R-24302, (in the former Township of Medora), now in the Township of Muskoka Lakes, as shown hatched on Schedule I to By-law 2026-XXX.

ii) Despite the provisions of Section 3.23.3 of Zoning By-law 2014-14, as amended, for those lands described above, the minimum permitted setback from the high water mark for a sport court shall be 152 feet as shown in the location and extent of Schedule II to By-law 2026-XXX.

iii) Despite the provisions of Section 3.45 of By-law 2014-14, as amended, for those lands described above, a sleeping cabin in the upper level of a two storey boathouse shall be permitted on a lot with two dwellings, as shown in the location and extent of Schedule II to By-law 2026-XXX

iv) Despite the provisions of Section 4.1.7 of Zoning By-law 2014-14, as amended, for those lands described above, shoreline structures shall be restricted to the shoreline structure envelopes as shown in the location and extent of Schedule II to By-law 2026-XXX.

iv) Despite the provisions of Section 4.1.7 and 4.1.7.12 a) of Zoning By-law 2014-14, as amended, for those lands described above, the maximum permitted cumulative dock width shall be 141 feet as shown in the location and extent of Schedule II to By-law 2026-XXX.

v) Despite the provisions of Section 4.1.7 and 4.1.7.12 a) and c) of Zoning By-law 2014-14, as amended, for those lands described above, the maximum permitted cumulative single storey boathouse width shall be 120.5 feet as shown in the location and extent of Schedule 11 to By-law 2026-XXX.

2. Schedules I and II attached hereto are hereby made part of this By-law.

3. All other provisions of By-law 2014-14 apply. To the extent of any conflict between By-law 2026-XXX and By-law 2014-14, as amended, the provisions of By-law 2026-XXX shall apply.

4. REPEAL OF BY-LAWS

4.1 By-law 2021-061, Section 1.ii) of By-law 2012-149 of the Corporation of the Township of Muskoka Lakes are hereby repealed.

DRAFT

5. That this by-law shall come into force and take effect _____, 2026.

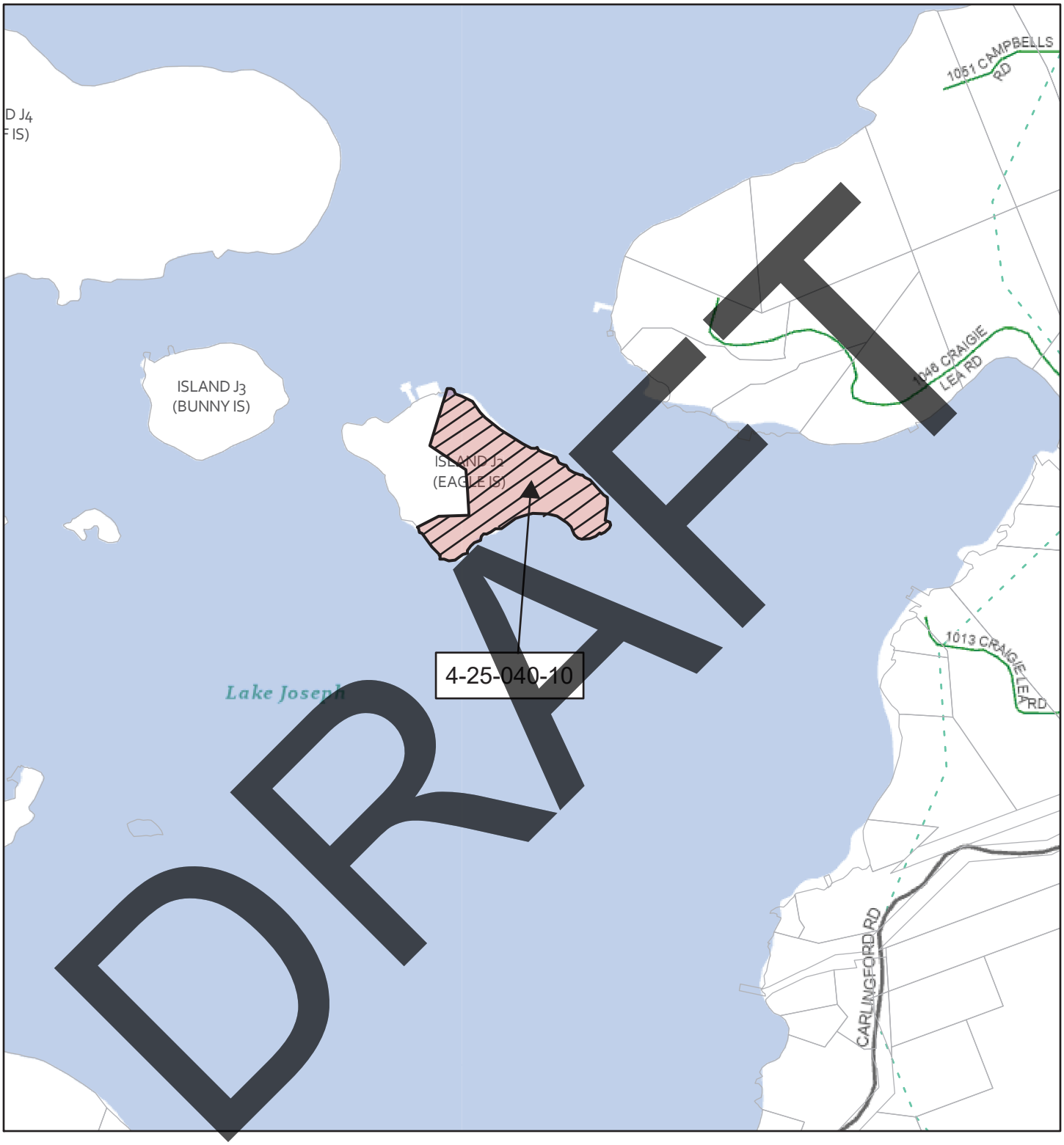
Read a **first, second** and **third time** and **finally passed** this **__th day of _____, 2026.**

_____
Mayor Peter Kelley

_____
Crystal Best-Sararas, Clerk

DRAFT

SCHEDULE I TO BY-LAW 2026-XXX



NOT A PLAN OF SURVEY. FOR INFORMATIONAL PURPOSES ONLY.

1:10,511

0 0.05 0.1 0.2 mi

0 0.1 0.2 0.4 km

Parcel: Assessment
District Municipality
Area Municipality
Geographic Township

Road Network
Township
Private

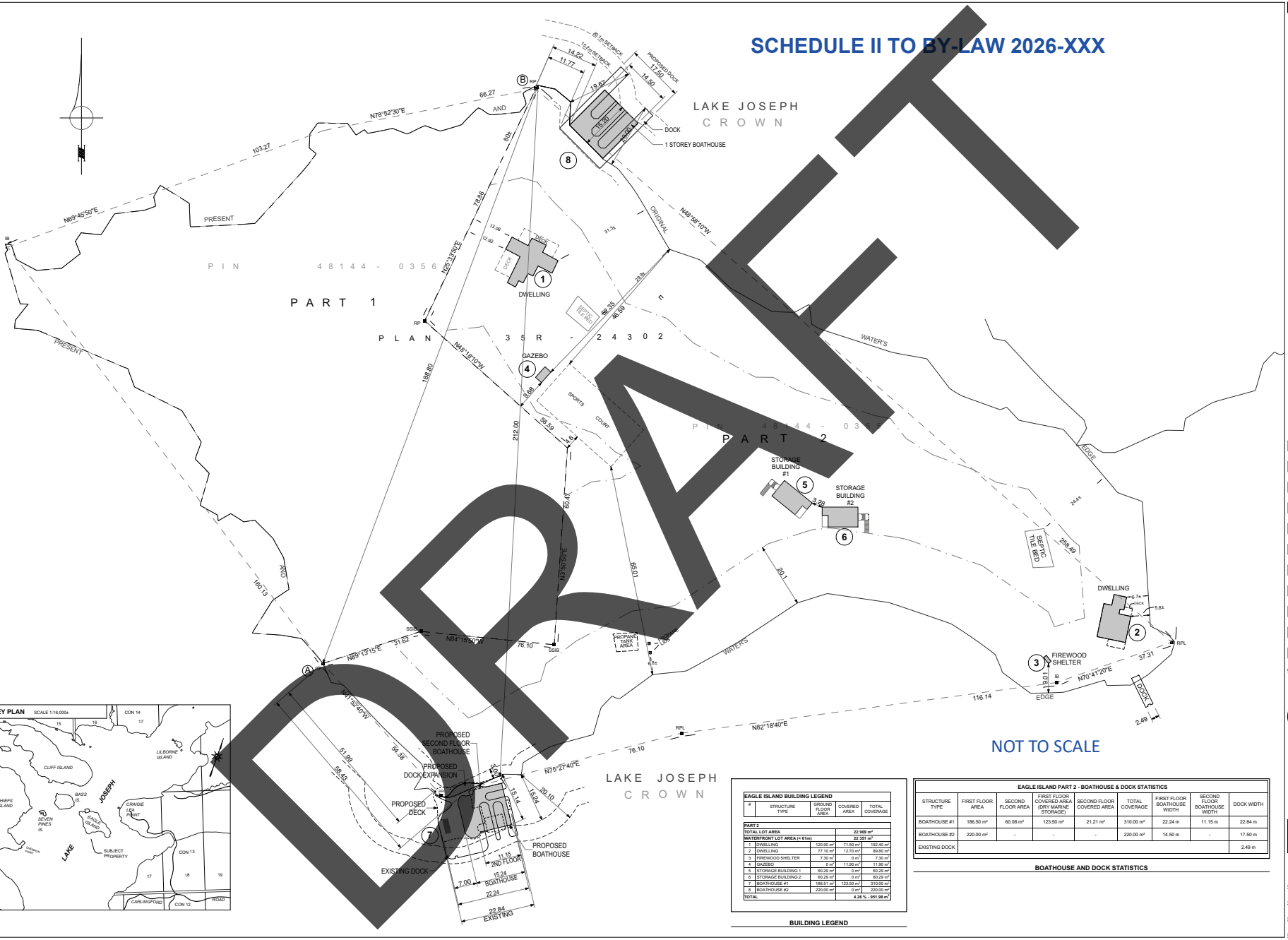
Wetland With Significance
Evaluated-Provincial

Evaluated-Other
Waterbody
Major Lake

Canada_Hillshade
World_Hillshade

Sources: NRCan, Esri Canada, and Canadian Community Maps contributors., Esri, NASA, NGA, USGS, FEMA

SCHEDULE II TO BY-LAW 2026-XXX



DRAFT

NOT TO SCALE

KEY PLAN SCALE 1:16,000±

EAGLE ISLAND BUILDING LEGEND

#	STRUCTURE TYPE	GROUND FLOOR AREA	COVERED AREA	TOTAL COVERAGE
PART 2				
TOTAL LOT AREA				**22 909 m²**
WATERFRONT LOT AREA (< 61m)				**22 351 m²**
1	DWELLING	120.90 m²	71.50 m²	192.40 m²
2	DWELLING	77.10 m²	12.70 m²	89.80 m²
3	FIREWOOD SHELTER	7.30 m²	0 m²	7.30 m²
4	GAZEBO	0 m²	11.90 m²	11.90 m²
5	STORAGE BUILDING 1	60.29 m²	0 m²	60.29 m²
6	STORAGE BUILDING 2	60.29 m²	0 m²	60.29 m²
7	BOATHOUSE #1	186.51 m²	123.50 m²	310.00 m²
8	BOATHOUSE #2	220.00 m²	0 m²	220.00 m²
TOTAL				**4.24 % - 991.98 m²**

BUILDING LEGEND

EAGLE ISLAND PART 2 - BOATHOUSE & DOCK STATISTICS

STRUCTURE TYPE	FIRST FLOOR AREA	SECOND FLOOR AREA	FIRST FLOOR COVERED AREA (DRY MARINE STORAGE)	SECOND FLOOR COVERED AREA	TOTAL COVERAGE	FIRST FLOOR BOATHOUSE WIDTH	SECOND FLOOR BOATHOUSE WIDTH	DOCK WIDTH
BOATHOUSE #1	186.50 m²	60.08 m²	123.50 m²	21.21 m²	310.00 m²	22.24 m	11.15 m	22.84 m
BOATHOUSE #2	220.00 m²	-	-	-	220.00 m²	14.50 m	-	17.50 m
EXISTING DOCK								2.49 m

BOATHOUSE AND DOCK STATISTICS

GENERAL NOTES

13.05.2026	ISSUED FOR REVIEW
08.01.2026	ISSUED FOR REVIEW

CHECK AND VERIFY ALL DIMENSIONS AND EXISTING SITE CONDITIONS BEFORE PROCEEDING WITH THE WORK. DO NOT SCALE DRAWINGS. REPORT ANY DISCREPANCIES IMMEDIATELY TO THE ARCHITECT. ALL WORK IS TO BE PERFORMED ACCORDING TO THE ONTARIO BUILDING CODE, ONTARIO BUILDING CODE (SB-BY-LAW).

ONTARIO ASSOCIATION OF ARCHITECTS
RICHARD MANN LICENCE 5169

PROJECT NORTH

richard mann architect inc.
153 Woodhaven Park Drive, Oakville, Ontario, L6L 4K4
www.richardmannarchitect.ca 905 339 5260

EAGLE ISLAND BOATHOUSE 2P2

PART 2, EAGLE ISLAND, LAKE JOSEPH
MUSKOKA LAKES ONTARIO P0G 1G0

SITE PLAN

DRAWING TITLE

SCALE: AS SHOWN

DATE: 01.2026

DRAWN BY: RM

A0

THE CORPORATION OF THE TOWNSHIP OF MUSKOKA LAKES

BY-LAW 2025-XXX

Being a By-law to amend Comprehensive Zoning By-law 2014-14, as amended, in the Township of Muskoka Lakes

WHEREAS the authority to pass this by-law is provided by Section 34 of the Planning Act, R.S.O. 1990, Chapter P.13 and amendments thereto;

AND WHEREAS By-law 2014-14 was enacted by the Corporation of the Township of Muskoka Lakes to regulate land use within the Municipality;

AND WHEREAS the Council of the Corporation of the Township of Muskoka Lakes deems it advisable to further amend By-law 2014-14;

NOW THEREFORE the Council of the Corporation of the Township of Muskoka Lakes enacts as follows:

1. Section 12 of By-law 2014-14 is hereby further amended by the addition of the following subsection:

87-XXXX

i) The land affected by this amendment is described as Part of Island J2 (Eagle Island), Lake Joseph (in the former Township of Medora), now in the Township of Muskoka Lakes, more particularly described as Part 2, Plan 35R-24302, as shown hatched on Schedule I to By-law 2025-XXX.

ii) Despite the provisions of Section 3.45 of Zoning Bylaw 2014-14, as amended, for those lands described above, a sleeping cabin in the upper level of a two-storey boathouse shall be permitted on a lot with two dwellings, as shown on Schedule II to By-law 2025-XXX.

iii) Despite the provisions of Section 4.1.7 of Zoning Bylaw 2014-14, as amended, for those lands described above, shoreline structures shall be restricted to the locations shown on Schedule II to By-law 2025-XXX.

iv) Despite the provisions of Section 4.1.7 of Zoning Bylaw 2014-14, as amended, for those lands described above, the maximum permitted cumulative dock width shall be 42.9 metres, as shown on Schedule II to By-law 2025-XXX.

v) Despite the provisions of Section 4.1.7 of Zoning Bylaw 2014-14, as amended, for those lands described above, the maximum permitted cumulative first storey boathouse width shall be 29.8 metres, as shown on Schedule II to By-law 2025-XXX.

vi) Despite the provisions of Section 3.23.3 of Zoning Bylaw 2014-14, as amended, for those lands described above, the minimum setback of a sports court from the high water mark shall be 46.6 metres, as shown on Schedule II to By-law 2025-XXX.

vii) Section 1. ii) of By-law 2012-149 is hereby repealed.

viii) By-law 2021-061 is hereby repealed.

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2. All other provisions of By-law 2014-14 apply. To the extent of any conflict between By-law 2025-XXX and By-law 2014-14, as amended, the provisions of By-law 2025-XXX shall apply.

3. Schedules I and II attached hereto are hereby made part of this By-law.

READ A FIRST TIME AND SECOND TIME this ____ day of _____, 2025

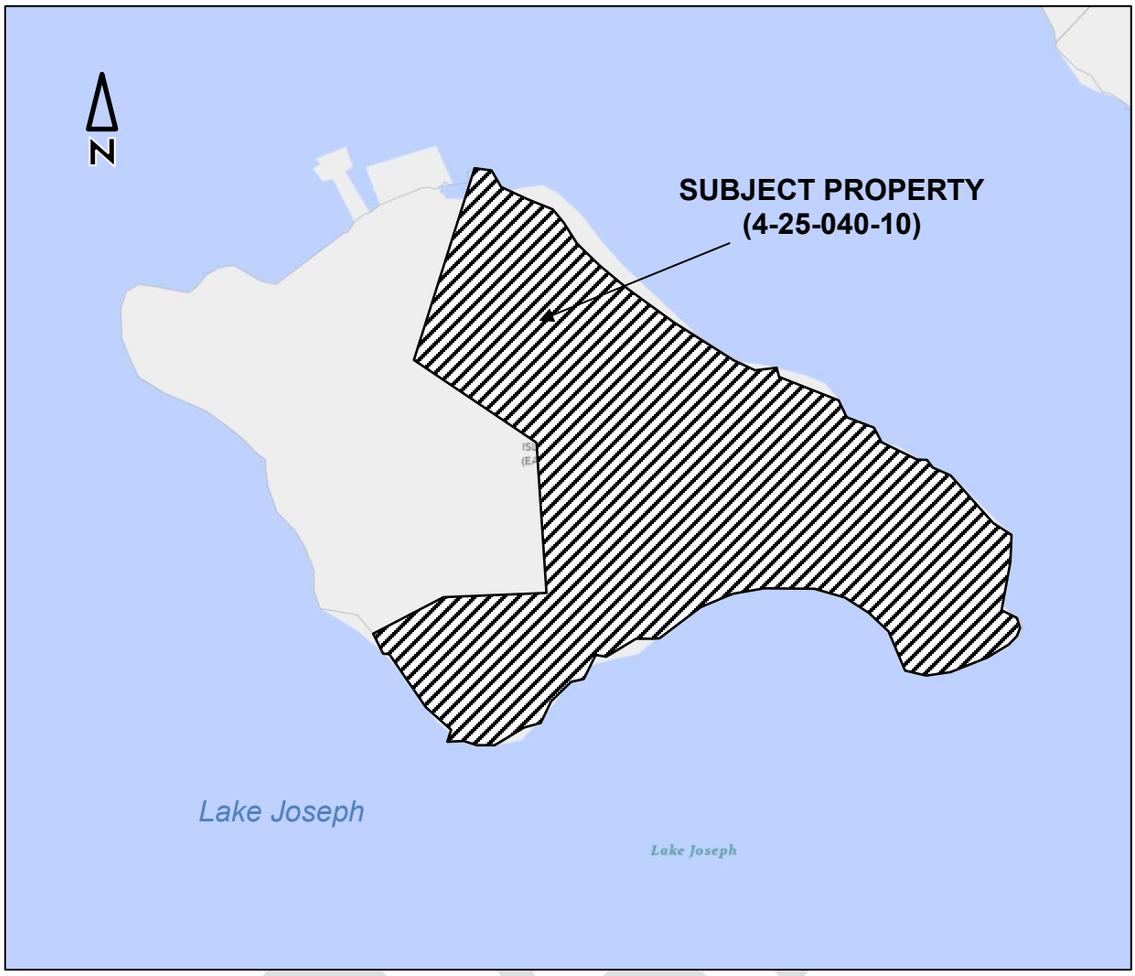
READ A THIRD TIME AND FINALLY PASSED the ____ day of _____, 2025

_____ _____

Peter Kelley, Mayor Crystal Paroschy, Clerk

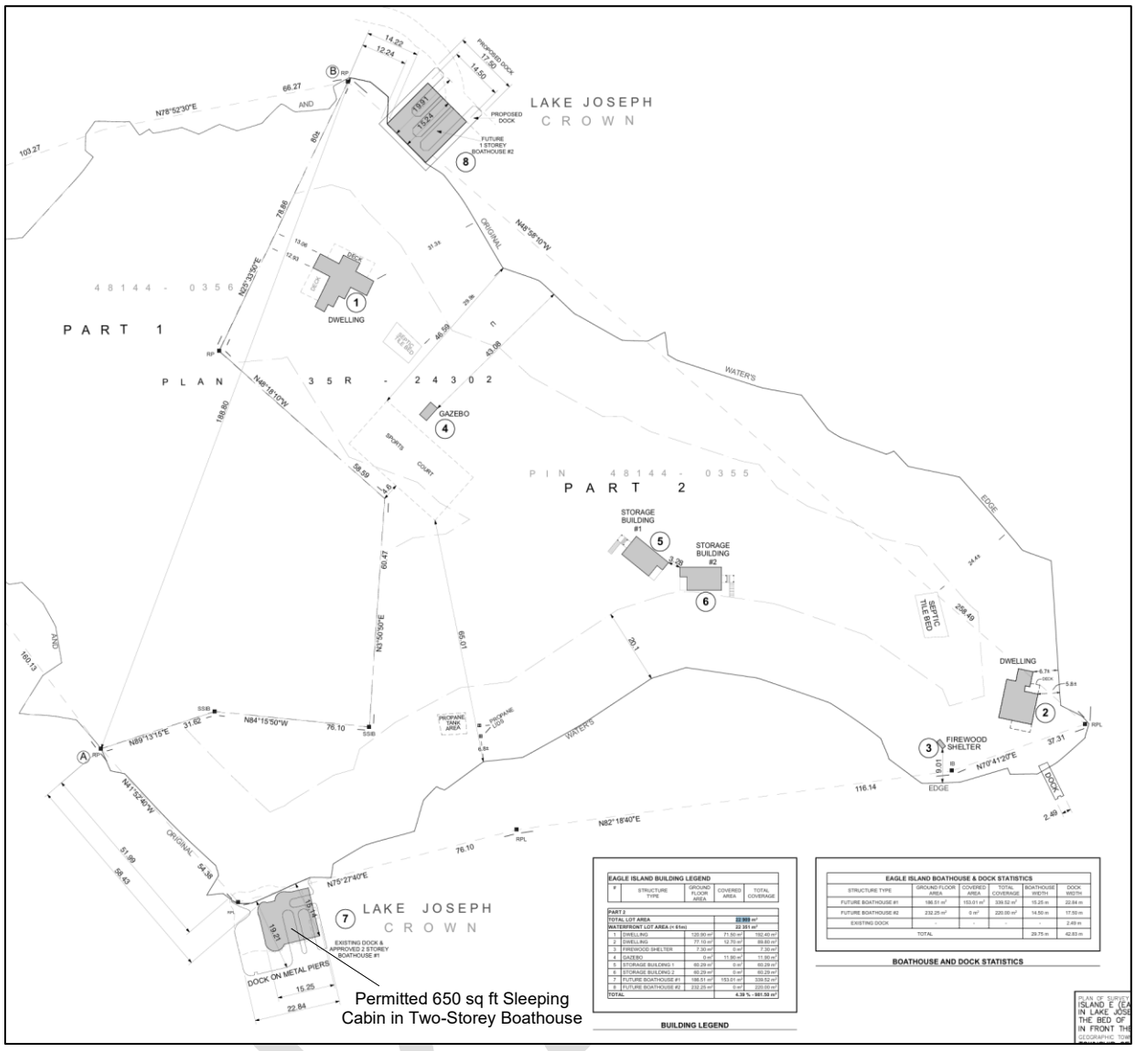
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SCHEDULE I TO BY-LAW 2025-XXX



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SCHEDULE II TO BY-LAW 2025-XXX



EAGLE ISLAND BUILDING LEGEND

#	STRUCTURE TYPE	GROUND FLOOR AREA	COVERED AREA	TOTAL COVERAGE
PART 2				
TOTAL LOT AREA			22 555 m²	
WATERFRONT LOT AREA (< 61m)			22 351 m²	
1	DWELLING	120.90 m²	71.50 m²	192.40 m²
2	DWELLING	77.10 m²	12.70 m²	89.80 m²
3	FIREWOOD SHELTER	7.30 m²	0 m²	7.30 m²
4	GAZEBO	0 m²	11.90 m²	11.90 m²
5	STORAGE BUILDING 1	80.29 m²	0 m²	80.29 m²
6	STORAGE BUILDING 2	80.29 m²	0 m²	80.29 m²
7	FUTURE BOATHOUSE #1	186.51 m²	153.01 m²	339.52 m²
8	FUTURE BOATHOUSE #2	232.25 m²	0 m²	220.00 m²
TOTAL				4.39 % - 981.59 m²

BUILDING LEGEND

EAGLE ISLAND BOATHOUSE & DOCK STATISTICS

STRUCTURE TYPE	GROUND FLOOR AREA	COVERED AREA	TOTAL COVERAGE	BOATHOUSE WIDTH	DOCK WIDTH
FUTURE BOATHOUSE #1	186.51 m²	153.01 m²	339.52 m²	15.25 m	22.84 m
FUTURE BOATHOUSE #2	232.25 m²	0 m²	220.00 m²	14.50 m	17.50 m
EXISTING DOCK					2.49 m
TOTAL				29.75 m	42.83 m

BOATHOUSE AND DOCK STATISTICS

DRAFT

Eagle Island Dock and Boathouse
Township of Muskoka Lakes
Fish Habitat Evaluation

P/N 2025-238
August 2025



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Elia Dock and Boathouse
Township of Muskoka Lakes
Fish Habitat Evaluation
PN 2025-235

1. INTRODUCTION

This report presents the results of a proposed dock and boathouse fish habitat conducted for the owners of a parcel of land described as Part 1, Eagle Island, Lake Joseph, Township of Muskoka Lakes. The report investigates the nature of Type 1 Fish Habitat along the shoreline of the subject property and the potential impact of the proposed dock and boathouse location with recommendations to avoid or mitigate potential impacts.

The proposed dock and boathouse are to be situated on the northern most extent of Egale Island in Lake Joseph. The island has historically been developed as a waterfront residential lot.



Figure 1 Location

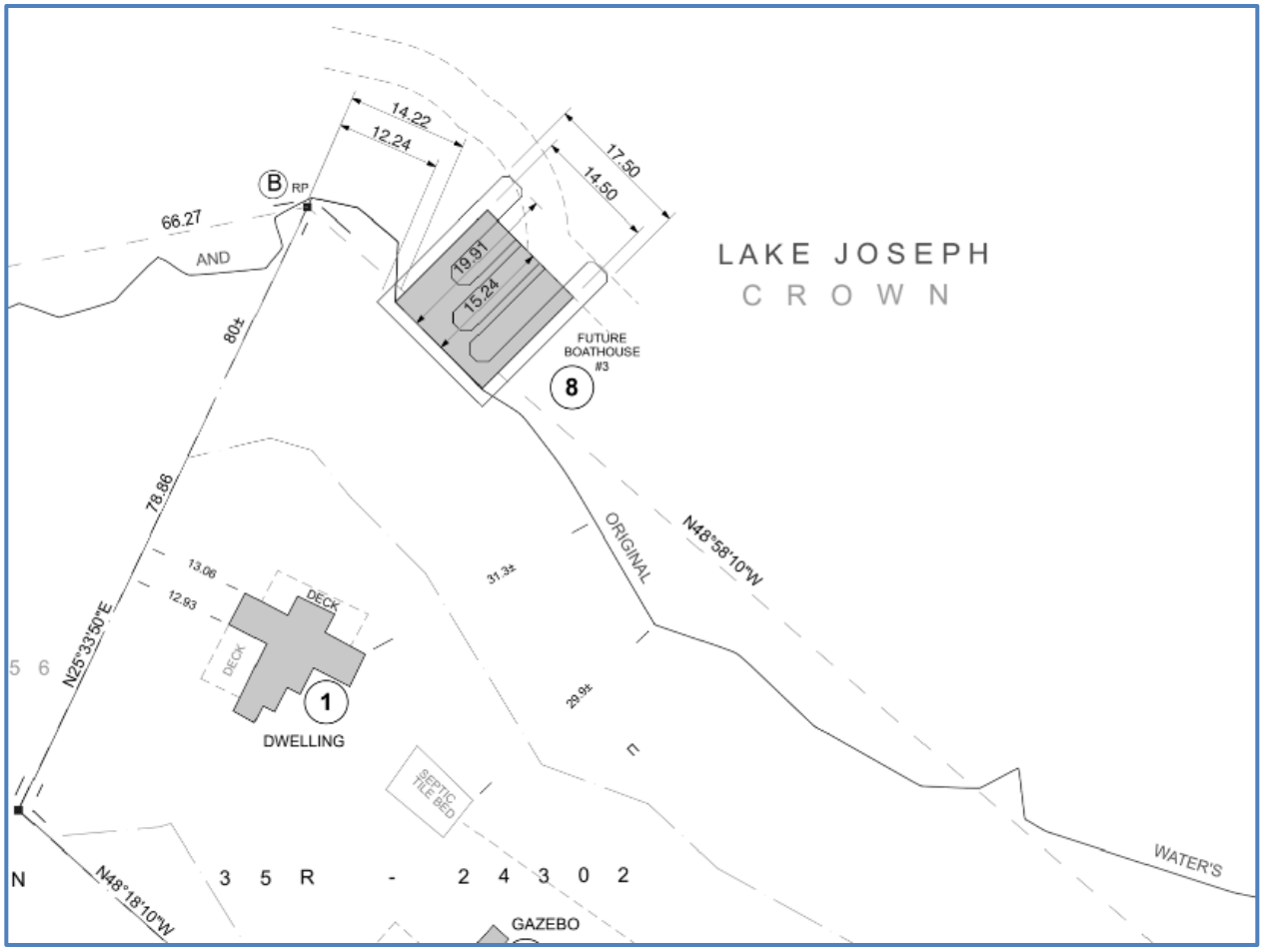


Figure 2 Proposed Dock and Boathouse

The proposal involves the construction of a dock and boathouse north of an existing dwelling offset from the property line extension on the north shore of the island. The structures are to be supported on steel piles to be drilled and pinned into the substrate.

A Fish Habitat Assessment was requested by the Township of Muskoka Lakes planning staff to confirm the previously mapped absence of Type 1 fish habitat at the preferred location for the dock/boathouse on the subject property. The following assessment is a fish habitat assessment of the proposed boathouse and dock works. It is a scoped analysis to provide an update to fish habitat mapping of the Township of Muskoka Lakes.

2. POLICY CONTEXT

Development in fish habitat is subject to the federal Fisheries Act. Fisheries and Oceans Canada (DFO) administers the legislation which includes specific prohibitions against persons carrying on works, undertakings or activities that result in the death of fish by means other than fishing and the harmful alteration, disruption or destruction of fish habitat (HADD). Proponents are responsible for planning and

implementing works, undertakings or activities in a manner that avoids harmful impacts, specifically the death of fish and the harmful alteration, disruption or destruction of fish habitat.

The Provincial Planning Statement (2024) states that "*development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements*".

The Township of Muskoka Lakes Official Plan (2013) sets out the following policies related to fish habitat:

7.9 Development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements.

7.14 Coldwater watercourses, as defined by the Ministry of Natural Resources (MNR), contribute to fish habitat. As such, increased setbacks of 30 metres (100 feet) as defined by the MNR from coldwater streams in the Rural area is recommended.

13.7 New two-storey boathouses shall generally meet the following requirements:

a) located on Category 1 Lakes, provided the structure is not located on a narrow waterbody and significant fish habitat is protected, as defined in this Plan;

13.8 New single-storey boathouses and boatports shall generally meet the following requirements:

a) located on Category 1, Category 2 or Category 4 Lakes, provided significant fish habitat is protected, as defined in this Plan;

The Township of Muskoka Lakes Official Plan (2022) adopted and approved, but under appeal, sets out more comprehensive policy related to fish habitat in section D1.3.5 as follows:

a) *Fish habitat means spawning grounds and any other areas, including nursery, rearing, food supply, and migration areas on which fish depend directly or indirectly in order to carry out their life processes.*

b) The federal government is responsible for the protection of fisheries (including fish habitat) under the Fisheries Act.

c) Development or site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements.

d) Development or site alteration shall not be permitted on lands within 120 metres (393.7 feet) of Type 1 fish habitat (otherwise known as adjacent lands) unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated through an Environmental Impact Study that there will be no negative impacts on the fish habitat or its ecological functions. Policies on Environmental Impact Studies, their contents and when they may be waived or scoped are contained in Section D1.4 of this Plan.

e) There are three types of fish habitat in the Township, with each type having an impact on how applications for development and site alteration are considered:

i) Type 1 (Critical) Habitats are those, which have high productive capacity, are rare, highly sensitive to development or site alteration, or have a critical role in sustaining fisheries (e.g., spawning and nursery areas for some species, and ground water discharge areas).

ii) Type 2 (Important) Habitats are moderately sensitive to development or site alteration and although important to fish populations, are not considered critical (e.g., feeding areas and open water habitats of lakes).

iii) Unknown habitat refers to areas where no information currently exists. Until specific information is generated, these areas should be treated in the same manner as Type 1 Habitats.

f) Type 1 habitats require the highest level of protection because of their specific sensitivity and importance to local fish populations. Type 2 habitats are less susceptible to development impacts. Unknown fish habitat includes areas where the type of fish habitat has not been

determined and until a fish habitat inventory is conducted it should be assumed that the habitat present is Type 1.

g) A Fish Habitat Assessment undertaken by a qualified professional at the appropriate time of year and using recognized protocols shall be required for development or site alteration within or adjacent to Type 1 and/or Unknown habitat. Development or site alteration may be exempted from this requirement provided that:
   i) The development or site alteration satisfies provincial and federal requirements or has been specifically authorized by the appropriate approval authority; and
   ii) Setback, vegetation buffer, stormwater management, and slope related policies of this Plan are met and the proposal is not for major development.

h) To support the protection of fish habitat, a target setback of 20 metres (65.6 feet) for new construction excluding shoreline or minor accessory structures will be required from cold water streams, with this target setback reduced to 15 metres (49.2 feet) from warm water streams.

i) In order to ensure the protection of fish habitat, all new shoreline lots shall have sufficient areas for shoreline related structures and uses that are not within critical fish habitat areas.

j) When considering the creation of new lots along the shoreline, the potential for establishing docks or other shoreline structures shall be considered to ensure that there is a reasonable private water access available in accordance with provincial and federal requirements and the policies of this Plan.

3. METHODOLOGY

The fish habitat assessment is habitat based. Habitat is assessed through a site visit during the time of year when habitat features are visible to document fish habitat feature characteristics and types. In field habitat assessment occurs by shoreline observation, in-water observation, drone photography, and, where appropriate or necessary, sonar observations.

Habitat is also assessed through an examination of available aerial photography, other fish habitat mapping resources (e.g. Aquatic Species at Risk Maps - Ontario (Fisheries and Oceans Canada) and Aquatic Resource Area Summary Data (Government of Ontario);) and, where available, Ministry of Natural Resources (MNR) fish habitat mapping.

Although some habitats are specifically used by a particular species at key times in their life history (e.g. spawning of Lake Trout on shoals), other habitat features are used by a variety species through-out their life cycle (e.g. areas of aquatic vegetation providing habitat for spawning, nursery, and/or feeding). Substrate type, slope/water depth, the presence of woody debris/fallen trees, large boulders, aquatic and overhanging vegetation, the presence of wetlands, the presence of a river mouth and other factors all assist in determining the presence of fish habitat types. The extent of shoreline development and water quality impacts associated with development is also a factor in assessing habitat quality.

Typically, fish habitat is characterized in three types.

Type 1 habitats have high productive capacity, are rare, in space and/or time, are highly sensitive to development, or have a critical role in sustaining fisheries (e.g., spawning and nursery areas for some species, and ground water discharge areas for summer and/or winter thermal refuges).

Type 2 habitats are moderately sensitive to development and, although important to the fish population, are not considered critical (e.g., feeding areas and open water habitats of lakes).

Type 3 habitats have low productive capacity or are highly degraded, and do not currently contribute directly to fish productivity. They often have the potential to be improved significantly (e.g., a portion of a

waterbody, a channelized stream that has been highly altered physically).

A site investigation was conducted on July 29, 2025.

3. DESCRIPTION OF SITE ENVIRONMENT

Eagle Island is within a small archipelago of islands at the confluence of Little Lake Joseph and Lake Joseph.

At the time of the site visit, there were several buildings on site, including multiple cottages and accessory structures, with construction of another approved dwelling occurring. Topography on the island is relatively flat, with a slight high point in the middle and sloping gently towards the lake. The shoreline at the development site is relatively level with a small drop at the lake edge. Although portions of the property in proximity to structures are landscaped and there are a series of trails on the island the subject property, and particularly the shorelines are well treed. A predominantly natural shoreline is present with minimal disturbances to the shoreline buffer.

Lake Joseph has a surface area of 5460ha, a maximum depth of 93m and a mean depth of 25m. The perimeter of the lake is 140km and 91km of island shoreline is present in the lake. The watershed of the lake, not including the lake itself, is 55 square kilometers in size. Water clarity is reported as 6.7m. Shoreline development levels are considered intense with a mixture of urban, commercial and shoreline residential uses. Lake water levels are controlled.

Major fish species recorded in Lake Joseph include lake trout (natural reproduction), lake whitefish, smallmouth bass, northern pike, muskellunge, burbot, black crappie, walleye, and largemouth bass. Other fish species include white sucker, brown bullhead, cisco, spottail shiner, American eel, trout-perch, central mudminnow, rainbow smelt (I), slimy sculpin, bluntnose minnow, margined madtom, mottled sculpin, blacknose shiner, creek chub, ninespine stickleback, brook stickleback, pumpkinseed, banded killifish, yellow perch, Iowa darter, rock bass, and golden shiner.

No stocking is currently reported however historic stocking includes smallmouth bass (1949), walleye (1958), lake trout (1967), and rainbow trout (1975).

Fish species present in Lake Joseph would predominantly utilize fully vegetated areas, smaller rock debris, and large sandy and gravelly shoals as habitat for spawning, nursery areas and feeding. Smooth exposed bedrock and cobble, such as that at the proposed dock and boathouse location, do not provide a significant fish habitat feature. The absence of aquatic shoreline vegetation and large areas of exposed bedrock indicate areas of low fish habitat potential on the portion of the shoreline where development is proposed.

The proposed dock and boathouse are to be situated on though north side of Eagle Island just north of an existing dwelling. The location is largely accessible by an existing trail network with only a minor trail addition required to access the proposed location.

The proposed boathouse and dockage is to extend from a relatively open area of shoreline and no significant shoreline vegetation is to be removed or altered to accommodate the access trail or the structures which will be almost entirely placed over the water.



Figure 3 Open Shoreline Access Area

The onshore environment consists of well vegetated shoreline with isolated pockets of shallow soils and scattered vegetation. The near shore substrate consists of large areas of exposed bedrock interspersed with areas of cobbles with minimal sediment and detritus.

The nearshore fish habitat fronting this portion of the northern shoreline is characterized by a shallow layer of large gravel to cobble immediately adjacent to the shoreline on top of bedrock which was exposed in much of the proposed dock location.



Figure 4 Exposed Bedrock and Shallow Gravel/Cobble Substrate

Although one fallen tree was present there was a pronounced absence of fallen woody debris as well as leaf litter that would act as refuge habitat for small fish and would assist in food prey production. Beyond the immediate shoreline area, approximately bedrock was exposed and nearshore slope increased into deeper water toward the north-west.

The water depth in the proposed boathouse and dock location on the north shore is located in an area where the water depth increases rapidly providing appropriate depths for boat access. Based on the shoreline profile, the proposed boathouse area and dockage provides the best access to deeper water with much of the rest of the shoreline, particularly toward the east being shallower and more gently sloping.

There is no aquatic vegetation present at the proposed location. Aquatic vegetation is present to the east well outside the project area in the shallower water which extends as a larger shoal toward the mainland.



Figure 5 Aquatic Vegetation Outside Project Area

For the current property, the MNRF previously identified the shoreline of the island as a combination of Type 1 (Critical) and Type 2 (Important) Fish Habitat. The area identified as the preferred location of the dock/boathouse is mapped as Type 2 based on the absence of aquatic vegetation noted in the littoral zone mapping exercise completed by MNRF for the Muskoka Lakes.

Site investigation confirmed a lack of Type 1 fish habitat attributes at the proposed dock and boathouse location, with fish habitat features being situated east of the proposed structure.

No evidence of spawning or fish utilization were observed in the proposed construction areas during the site visit. Fish were however observed in the vegetated portion of the shoreline to the east of the proposed dock and building site.

Appropriate site-specific refinement of fish habitat mapping suggests that portions of the shoreline do not exhibit Type 1 Fish habitat characteristics and shoreline fish habitat mapping can be confirmed accordingly as shown in the following figure.

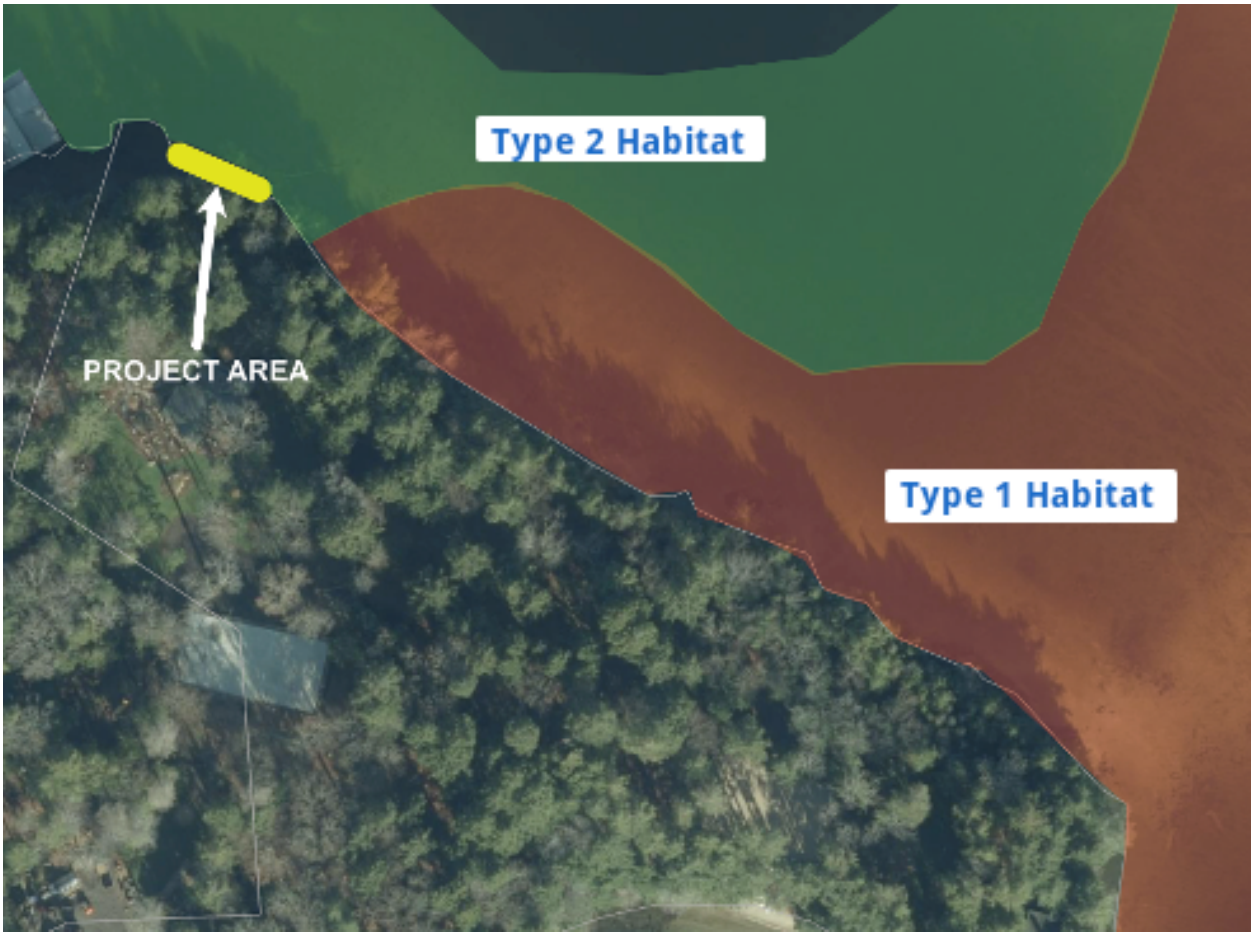


Figure 6 Areas of Type 1 Fish Habitat and Development Areas

4. ECOLOGICAL IMPACT ASSESSMENT

The assessment suggested that the shoreline exhibits differing characteristics with respect to potential fish habitat. Typical Type 1 fish habitat is associated with aquatic macrophyte beds or high quality gravel and/or cobble substrates and shoals. These features are not present in the proposed development area. Type 1 Fish habitat is present along the shoreline and offshore to the east of the proposed boathouse and dock areas, but the development area is situated well outside Type 1 fish habitat.

Access will be utilizing existing paths or areas of exposed bedrock or sparse ground vegetation. No tree clearing or significant onshore disturbances are required to provide access.

Based on the fact that the dock is not situated in Type 1 Fish habitat, and is proposed to be constructed in a manner which has a minimal footprint on the lake bottom and does not require any alteration of the physical shoreline features, no significant environmental impact is anticipated.

Site investigation indicated that in the areas in which the boathouse and dock are proposed, the following conditions are present:

- The shoreline environment consists primarily of exposed bedrock with no areas of vegetation and soil;
- The near-shore underwater zone in the boathouse area consists of a combination of bedrock and large cobbles;
- There was no indication of extensive sand or silt deposits;
- There was no indication of extensive aquatic vegetation being present and this is consistent with the nature of the presence of bedrock and cobbles and lack of any accumulating mulm/decayed vegetation/sediment; and
- There was no indication of gravelly or sandy shoals which may be used as spawning areas.

The construction of the boathouse and docks would therefore not detrimentally impact fish habitat as the impact area is not characteristic of significant reproductive or nursery habitat for fish species. While fish would not necessarily be absent, the general nature of the shoreline is not suggestive of critical or Type 1 fish habitat.

This means that the structure in our opinion would have no direct impact on fish habitat.

Shoreline access activities associate with removal of surface vegetation and soils raise the potential for introduction of sediment entering the lake. Although it is anticipated that shoreline access will be achieved utilizing existing paths and exposed bedrock surfaces, any potential impacts can be further avoided by:

- Minimizing vegetation removal if needed.
- Placing appropriate silt control measures where vegetation or soil is disturbed. Given the shallow nature of soils and large areas of exposed bedrock this is most likely to be successfully achieved by removing all vegetation and soil in the impacted area and placing it in a secure location with no opportunity for eroding into the lake.
- Utilizing straw bales to limit erosion and sediment movement where temporary or partial disturbance occurs and maintaining such measures until a stable surface cover can be restored.
- Only where the above measures would be inadequate to control erosion and sedimentation, placing a turbidity curtain immediately adjacent to the impacted area.

In-water activities associated with placing any structures on the lake bottom, removing cobbles, drilling anchors into shoreline rock etc. also raise the potential of sediment suspending in the lake. Given the configuration of the shoreline, it is likely that such sediment would re-settle in the same general area, however this should be avoided.

Based on observations of the nature of lake bottom in the construction area, there is not anticipated to be any extensive generation of sediment or turbidity loads. However, if unanticipated conditions occur and there is any evidence of the construction activities disturbing the lake bottom and creating observable levels of sediment suspension or turbidity, work should stop immediately, and a turbidity curtain should be installed prior to works continuing. This will ensure that no suspended sediment exits the construction impact area.

Any fueling of construction equipment should take place off-site away from the shoreline and spills control materials should be available. Any inadvertent spills of fuels, paints, stains etc. should be promptly contained, cleaned up and reported. All construction debris should be contained and properly disposed of and not introduced to the lake.

It is recommended that despite the minimal impact of dock placement, all in-water work should occur within the timing window recommended by the Ministry of Natural Resources and Forests (MNRF) which, based on the range of fish species present in the lake, would typically be July 15 to September 30th of any given year, unless otherwise directed in a work permit obtained from MNRF or Department of Fisheries and Oceans authorizations.

5. CONCLUSION

An assessment of Type 1 Fish Habitat on the subject property indicates that the mapping can be confirmed and that fish habitat is limited to portions of the shoreline that are not impacted by the proposed works. The proposed boathouse and dock location is situated entirely outside Type 1 Fish habitat and the structures can be built:

- in compliance with applicable Fisheries Act requirements;
- in a manner consistent with the requirements of the Provincial Planning Statement (2024); and
- in conformity with applicable Official Plan policies (existing and proposed).

Based on mitigative measures proposed in this report, and with in-water works taking place in accordance with applicable timing windows, no fish habitat impact is anticipated.

Michael Wynia, MCIP, RPP
Ecologist and Environmental Planner

PLANNING JUSTIFICATION REPORT

Zoning By-law Amendment

EAGLE ISLAND, UNIT 2
Township of Muskoka Lakes

September 25, 2025

Rian Allen MSc, RPP, MCIP

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BRACEBRIDGE, ON
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PLANNING JUSTIFICATION REPORT

Zoning By-law Amendment

EAGLE ISLAND, UNIT 2

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1. Overview:

This Planning Justification Report has been prepared in support of a Zoning By-law Amendment application on Eagle Island, Unit 2 on Lake Joseph in the Township of Muskoka Lakes. The Zoning By-law Amendment proposes permit increased cumulative dock width associated with a proposed second boathouse on the lot, and to recognize the setback of an existing sports court.

The purpose of this Planning Justification Report is to:

- Provide background information about the subject property
- Describe the details of the proposed zoning by-law application
- Assess the planning merits of the application
- Address the applicable policies of the Provincial Policy Statement, District of Muskoka Official Plan and Township of Muskoka Lakes Official Plan and Zoning By-law

Supporting Documents:

- Fish Habitat Evaluation, Krystawyn Consulting

2. Location:

The subject property is located on the east side of Eagle Island - Unit 2 on Lake Joseph, within the municipal boundaries of the Township of Muskoka Lakes, and is legally described as ISLAND EAGLE RP 35R24302; PART 2. The application is also the owner of the western side of the island. A location map of the subject property is provided in **Figure 1** and a more detailed location map in **Figure 2**.

Figure 1. Location Map



Figure 2. Detailed Location Map



3. Property Characteristics:

The subject property is located on the eastern part of Eagle Island on Lake Joseph. The lot area is approx. 2.2 hectares is size, with approx. 189.0 metres of straight line frontage, and approx. 640 metres of actual frontage. The total area of Eagle Island is 3.83 hectares with approx. 975 metres of actual frontage. The applicant is also the owner of the western part of the island.

The subject property is developed with two dwellings, one large dock and one small dock, two storage buildings, a gazebo and a sports court. The shoreline vegetation consists primarily of coniferous tree species and the interior area of the island is mixed deciduous and coniferous species. The shoreline vegetative buffer is intact and considerable along the majority of the shoreline of the island. The topography gradually rises from the Lake Joseph shoreline to level terrain in the interior of the lot with no steep slopes. Rock outcrops are present along many parts of the shoreline. The neighbouring properties are used for residential and waterfront recreational purposes and are developed with similar uses and structures.

Photos of the subject property and surrounding area are provided in **Figures 3 to 9.**

Figure 3. Existing Dwelling #1



Figure 4. Existing Delling #2



Figure 5. Existing Sports Court



Figure 6. Existing Small Floating Dock



Figure 7. Existing Large Dock and Future Two-Storey Boathouse Location



Figure 8. Southern Shore of Eagle Island



Figure 9. Shoreline Location of the Proposed Dock and One-Storey Boathouse



4. Proposed Development

The subject property is proposed to be developed with a new three slip, one-storey boathouse and associated dock located on the northern shoreline. The proposed boathouse is 14.5 metres wide and will increase the cumulative first strorey boathouse width to 29.8 metres, which exceeds the maximum 22.9 metre limit. The proposed 17.5 metres width dock associated with the new boathouse, combined with the widths of the existing docks is 42.9 metres and also exceed the 22.9 metre maximum limit.

The previously existing 3.1 metre wide small dock located on the eastern point of the shoreline is proposed to be recognized. This dock was relocated slightly further south and reconfigured to be longer and narrower.

A new sports court was constructed on the property between in 2023. The court is setback 46.6 metres from the shoreline at the closest point and is located within the minimum 61 metre sports courts setback. The previously existing sports court on the property was setback 43.5 metres from the shoreline. The shoreline setback of the existing court is proposed to be recognized to permit the court to remain.

By-law 2021-061 was approved in August 2021 to permit a 'Dining Hall ' building on the property that was centrally located at the rear of the lot. Specific definitions were included in the By-law to control the use of the building and ensure it was not used for overnight accommodations and to prevent interior alterations. The By-law also included approval of a building envelope for shoreline structures that was associated with a new two-storey boathouse and dock located on the southern shoreline, and permitted a sleeping cabin on a lot containing two dwellings. The By-law repealed Section 1.ii) of By-law 2012-49, which was approved when the Island was severed into two lots, and permitted shoreline structures on the subject property (eastern lot) to be located on part of the northern shoreline.

The approved Dining Hall building is located partly in the location of the existing sports court that is proposed to be permitted by recognizing the existing shoreline setback. There is no longer a desire to construct the Dining Hall building and the previous approval is proposed to be removed from the property.

The proposed application will have the effect of: Permitting increased cumulative dock and first storey boathouse widths to allow for the construction of one-storey boathouse and associated dock, and to recognize the small floating dock at the point; Permitting an existing sports court that was constructed with a reduced setback from the shoreline; and Repealing By-law 2021-061 and carrying forward the relevant provisions that permits a sleeping cabin on a lot with two dwellings. The minimum lot area and frontage requirements of By-law 2012-149 will also be retained.

5. Planning History

The subject property has been subject to a number of planning approvals:

- Severance application no. B/47/12/ML severed Eagle Island into two lots, which created the subject property.
- A Zoning By-law Amendment application no. ZBA-46/12, (By-law 2012-149 and exemption no. 87-1539) was approved as a condition of severance application no. B/47/12/ML to require the area and frontage of the severed and retained lots to be the minimum lot size requirements, and to limit the permitted location of shoreline structures on the severed lot (now the subject property).
- A Zoning By-law Amendment application no. ZBA-19/21, (By-law 2021-061 and exemption no. 87-1950) was approved to permit a Dining Hall building on a lot with two dwellings and one sleeping cabin, to define the Dining Hall building use, to prohibit additions and exterior alterations to the Dining Hall, to restrict shoreline structures to a defined envelope, and to repeal Section 1.ii) of By-law 2012-149, which is the permitted location of shoreline structures on the subject property.

6. Proposed Zoning By-law Amendment Application:

The proposed Zoning By-law Amendment application includes the following exemptions:

1. Permit 42.9 metres of maximum cumulative dock width
2. Permit 29.8 metres of maximum cumulative first storey boathouse width
3. Permit a 46.6 metre minimum setback from the high water mark for an existing sports court
4. Permit one sleeping cabin on a lot that contains two dwellings (carry forward from By-law 2021-061)
5. Repeal Section 1.ii) of By-law 2012-149 (carry forward from By-law 2021-061)
6. Repeal By-law 2021-061

The proposed site plan that includes the existing and proposed building locations is provided in **Figure 10**. The approved site plan from By-law 2012-149 is provided in **Figure 11** and the approved site plan from 2021-061 is provided in **Figure 12**.

Figure 10. Proposed Site Plan

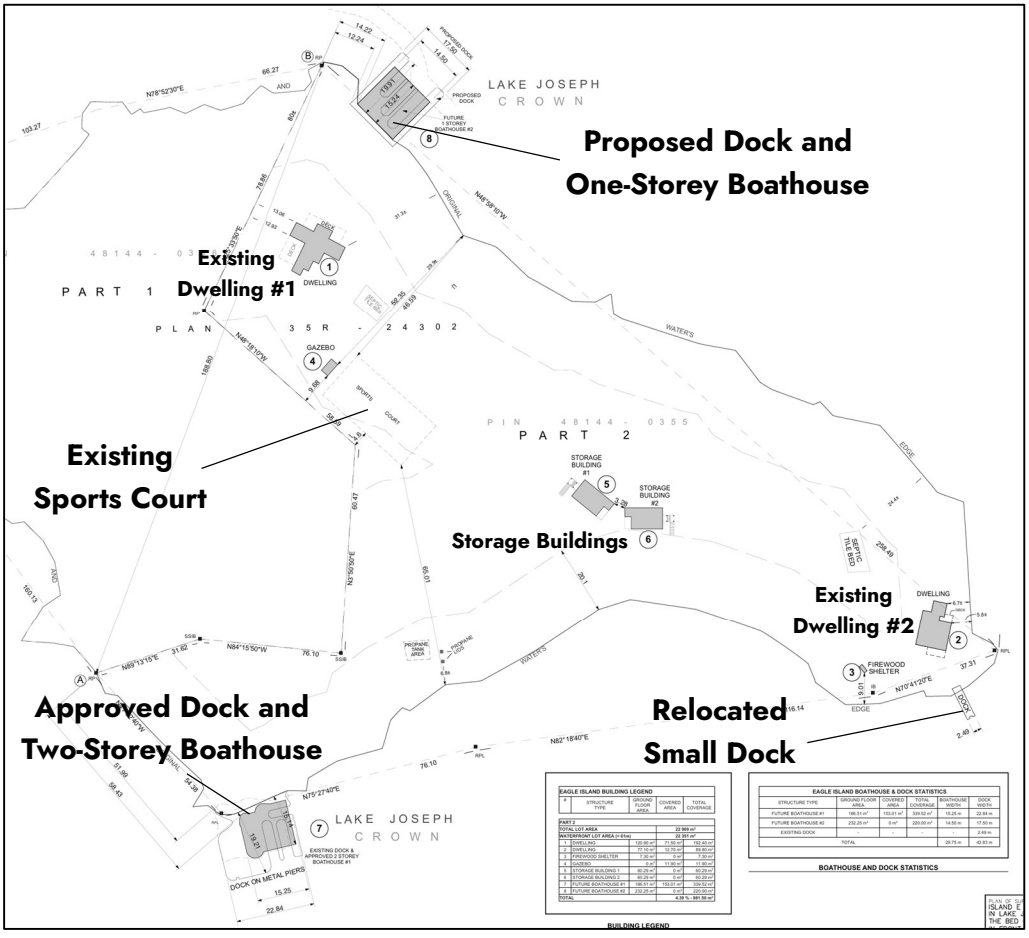


Figure 11. By-law 2012-149

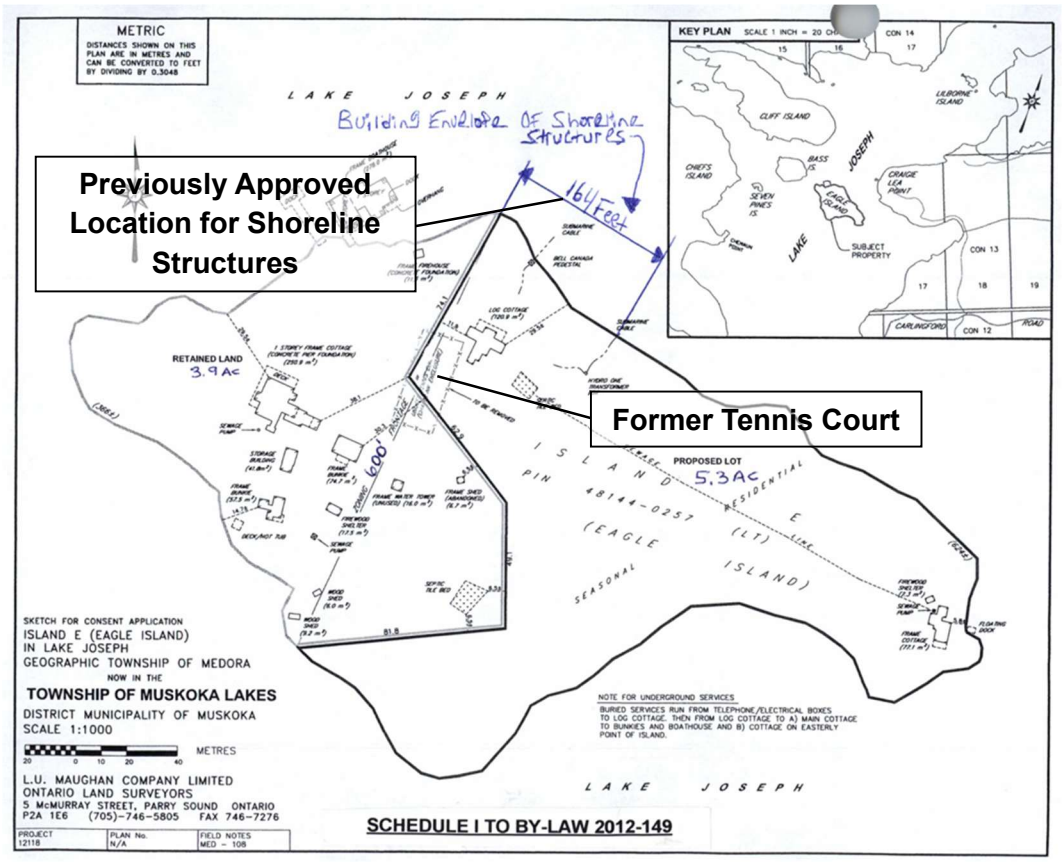
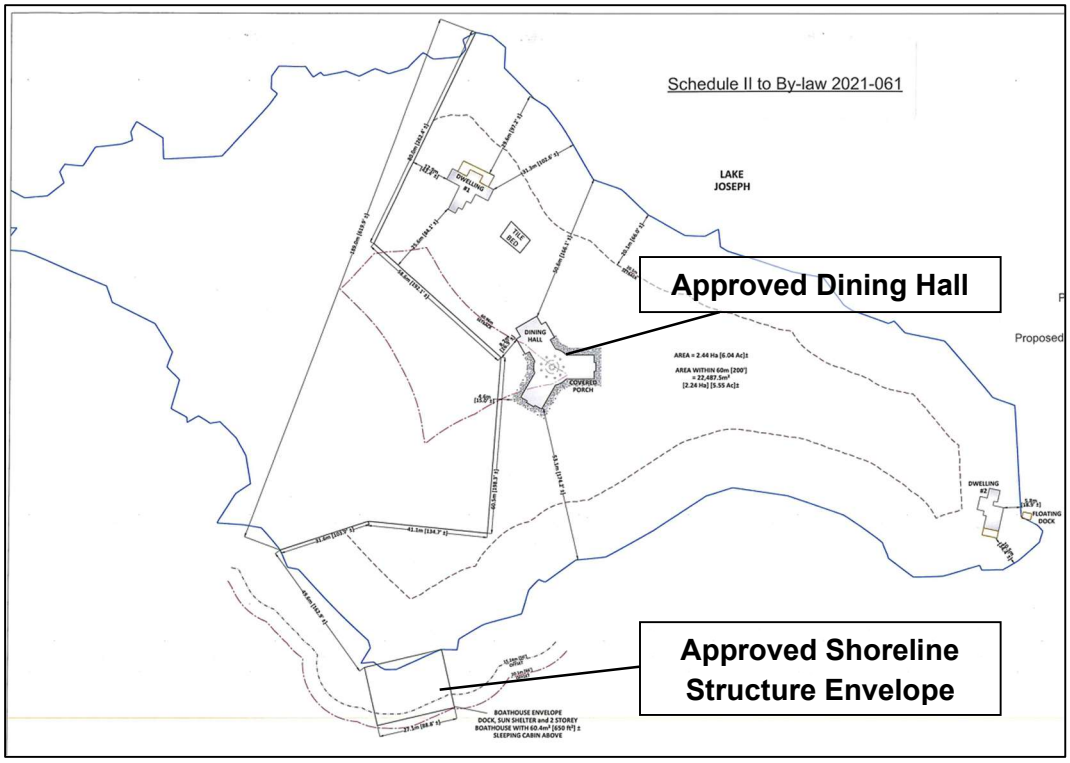


Figure 12. By-law 2021-061



7. Planning Analysis

Provincial Planning Statement, 2024

The Provincial Planning Statement, 2024 (PPS) identifies provincial planning interests. Development applications are required to be consistent with provincial policy statements issued under Section 3 of the *Planning Act*.

The subject property is located within the "Rural Area" and on "Rural Lands", as defined by the PPS. The rural policy section of the PPS recognizes the importance, diversity and character of Ontario's rural areas. The PPS identifies that Northern Ontario's natural environment and vast geography offer different opportunities than the predominately agricultural areas of southern regions of the Province. The Rural Areas and Rural Lands policies envision development, that can be adequately serviced. The policies most applicable to the Zoning By-law Amendment are provided.

Section 2.5.1 describes the importance of Rural Areas in Municipalities, and states:

> *"Healthy, integrated and viable rural areas should be supported by: a) building upon rural character, and leveraging rural amenities and assets; e) using rural infrastructure and public service facilities efficiently; f) providing opportunities for sustainable and diversified tourism, including leveraging historical, cultural, and natural assets; and h) conserving biodiversity and considering the ecological benefits provided by nature".*

Section 2.6.1 applies to Rural Lands in Municipalities, and states that the permitted uses are:

> *"b) resource-based recreational uses; c) residential development, including lot creation, where site conditions are suitable for the provision of appropriate sewage and water services, and g) other rural land uses."*

Section 2.6 also directs that:

> *"6.2.2. Development that can be sustained by rural service levels should be promoted"*
>
> *"6.2.3. Development shall be appropriate to the infrastructure which is planned or available, and avoid the need for the uneconomical expansion of this infrastructure"*

Section 4.1 applies to Natural Heritage and states that:

> *"4.1.6. Development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements."*

"4.1.5. Development and site alteration shall not be permitted in: d) significant wildlife habitat unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions"

Docks, boathouses and sports courts are permitted in the Rural Area and on Rural Lands. No new services are associated with the proposed development, with no impacts to existing services. The proposed dock and boathouse are located in Type II General Fish Habitat and in proximity to Type I Critical Fish Habitat. A Fish Habitat Evaluation was completed which concludes that fish habitat is not impacted by the proposed dock and boathouse and that the proposed structures are situated entirely outside Type 1 fish habitat.

The proposed application has been reviewed against the applicable policies of the PPS, is found to be consistent and does not conflict with provincial policy.

District of Muskoka Official Plan, March 2023

The District of Muskoka Official Plan includes policies, guidelines and regulations that direct the actions of the District and shapes growth and development. The Plan recognizes the importance of the land use planning responsibilities of the Area Municipalities in the District. Consequently, the Official Plan establishes an overall land use planning framework and is not intended to duplicate the policies of the Area Municipal Official Plans. Instead, the District Plan is intended to provide guidance to area municipalities for the establishment of detailed land use policies (Policy A.3). The policies that are particularly relevant to the proposed application are provided.

The subject lands are designated Waterfront Area on Schedule A: Land Use Designation.

J4.1(b) The Waterfront Area generally includes those lands extending inland 150 metres from any lake greater than 8 hectare in area, any major river, and/or any waterbody that is part of the District of Muskoka recreational water quality monitoring program.

J4.1(c) Lands that physically or functionally relate to the Waterfront Area, although extending beyond 150 metres from a lake will be deemed to be within the Waterfront Area.

Policy J4.3 describes the permitted uses in the Waterfront Area which include: Resource-based recreational uses including low density, single unit recreational dwellings, and limited year-round low density, single unit residential development. Policy J4.3 also directs that Area Municipal Official Plans shall contain more detailed policies addressing development in the Waterfront Area to implement the

policy framework established in this Section and deal with local matters such as but not limited to the following:

i) The character of various waterfront areas and how each area should be planned;

ii) Private on-site individual water and sewage servicing and storm water management requirements;

iii) Sleeping cabins; Boathouses and docks;

iv) Slopes.

The subject property is identified to contain significant wildlife habitat "Deer Wintering Area (Stratum 2)" identified on Schedule C2: Natural Heritage Features and Areas.

Policy C1.4.4.2(b) Development or site alteration should generally not be permitted in Stratum 1 winter deer habitat, since it would typically result in negative impacts on the dense conifer thermal cover and critical food supply that deer require to conserve energy during severe winter periods. Development or site alteration in Stratum 2 habitat should conserve valuable conifer thermal cover, feeding areas and movement corridors. Should habitat be identified, the location of development shall avoid the habitat and/or mitigation measures proposed that result in no negative impacts to the features or their functions. In designated growth areas, impacts shall be mitigated to the extent feasible direct that development or site alteration should generally not be permitted in Stratum 1 winter deer habitat. Development or site alteration in Stratum 2 habitat should conserve valuable conifer thermal cover, feeding areas and movement corridors.

The proposed dock and boathouse are located overwater, do not tree removal and do not impact deer wintering habitat. No Stratum 1 habitat is present on the subject property according to Schedule C2. Development that is permitted in Stratum 2 habitat should conserve forest/thermal cover, feeding areas and movement corridors. The existing sports court required some tree removal, however the density of development on the subject property is very low, and the remainder of the property is well-forested and vegetated. Development is permitted in Stratum 2 habitat.

District policies include considerations and directions for development near fish habitat.

Policy C1.3.1(c) Development and site alteration shall not be permitted in fish habitat except in accordance with Provincial and Federal requirements.

Policy C1.4.5(f) A Fish Habitat Assessment undertaken by a qualified professional at the appropriate time of year and using recognized protocols shall generally be required for development within or adjacent to Type 1 and/or Unknown habitat.

Policy C1.4.5(g) To support the protection of fish habitat, new development, excluding shoreline or minor accessory structures, shall generally be set back: ii) A target setback of 30 metres from cold water lakes (shown on Schedule D) and streams will be encouraged, but in consideration of historical development patterns on lakes that are not identified as lake trout lakes at capacity, the minimum required setback may be reduced in accordance with Section C2.6.4.2 f)

A Fish Habitat Evaluation was completed which concludes that fish habitat will not impacted by the proposed dock and boathouse and that the proposed structures are situated entirely outside Type 1 fish habitat. The existing sports court exceeds the targeted 30 metre shoreline setback, which is identified to protect fish habitat, by more than 50%.

The proposed Zoning By-law Amendment application has been reviewed against the applicable policies of the District Official Plan, is found to conform, and does not conflict.

Township of Muskoka Lakes Official Plan, April 2013/December 2023

The Township adopted a new Official Plan that was approved by the District in November 2023. The last day of appeal was December 26, 2023, and multiple appeals were received. The appeal proceedings were still underway when this application was submitted, and the Tribunal has not provided final decision about the status of the appeals.

In the planning legislative context, the 'Clergy Principle' represents the premise that an application for development should be reviewed against the policy documents in place at the date of the application. The *Planning Act* directs that in the event of an appeal to all or part of a Council's decision, the part of the decision that is not the subject to appeal is final and comes into effect after the last day of appeal. Where a council decision has been appealed, the Ontario Land Tribunal (OLT) is the approval authority and will make a decision in respect to the appeal.

Accordingly, the proposed Zoning By-law Amendment application will be reviewed against the policies of the new Official Plan that were not appealed and in now effect, and against the policies of the 2013 Official Plan for the new policies that are under appeal. Regard was had for the policies under appeal.

The Township Official Plan describes how lands will be used and developed and includes a series of goals and objectives. The Township Official Plan implements the policies of the District Official Plan and the provincial policy. The policies that are particularly relevant to the proposed application are provided.

Section B.1.1.1 of the Old Township Official Plan (2013) defines the Waterfront designation as:

> *B.1.1.1 The Waterfront designation shall generally be defined as those lands extending inland 150 metres (500 feet) from any standing waterbody greater than 8 hectares (20 acres) in area or the substantive rivers within the Township: Indian, Joseph, Moon, Musquash, and Severn.*

The New Township Official Plan (2023) classifies Lake Joseph as a Category 1 Large Lakes on Table B of Section E4.3.1. Section E3 of the New Township Official Plan (2023) describes the permitted uses in the Waterfront Area to include: Resource-based recreational uses including low density, single unit recreational dwellings and year-round low density, single unit residential dwellings. The subject property is developed with two existing dwellings.

Section N15.2 of the New Township Official Plan (2023) applies to accessory uses and states that:

> *Accessory uses that are customarily incidental and subordinate to and exclusively devoted \to a principal use permitted in a land use designation by this Plan are also permitted.*

The shoreline structure and natural heritage policies include numerous policies related to fish habitat. The New Township Official Plan (2023) includes general policies for shoreline structures.

> *L15.1(c)(i) Buildings, structures, or works extending beyond the normal or controlled high water mark or located at the shoreline shall be designed and located in a suitable manner so as to have regard for the following matters: Critical fish habitat and wildlife habitat; The natural flow of water; Swimming and the safe navigation of watercraft; Potential damage from flood and ice; Privacy; and, Other shoreline, resource development, and environmental policies.*

The New Township Official Plan (2023) also includes policies related to fish habitat and fish habitat protection.

> *D1.3.5(c) Development or site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements.*
>
> *D1.3.5(d) Development or site alteration shall not be permitted on lands within 120 metres (393.7 feet) of Type 1 fish habitat (otherwise known as adjacent lands) unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated through an Environmental Impact Study that there will be no negative impacts on the fish habitat or its ecological functions. Policies on Environmental Impact Studies, their contents and when they may be waived or scoped are contained in Section D1.4 of this Plan.*
>
> *D1.3.5(g) A Fish Habitat Assessment undertaken by a qualified professional at the appropriate*

time of year and using recognized protocols shall be required for development or site alteration within or adjacent to Type 1 and/or Unknown habitat.

D1.3.5(h) To support the protection of fish habitat, a target setback of 20 metres (65.6 feet) for new construction excluding shoreline or minor accessory structures will be required from cold water streams, with this target setback reduced to 15 metres (49.2 feet) from warm water streams.

A Fish Habitat Evaluation was completed for the proposed development and concludes that fish habitat is not impacted by the proposed dock and boathouse and that the proposed structures are situated entirely outside Type 1 fish habitat. The Evaluation also concludes that the proposed structures can be built in compliance in compliance with the applicable Fisheries Act requirements. The existing sports court is setback more than 46 metres from the shoreline at the closest point, which is more than double the targeted setback of 20 metres, and the court location is well-buffer and screened from lake views.

The lot creation policies of the New Township Official Plan (2023) include permission to divide two or more legally existing uses on a property resulting in no more than one dwelling and one sleeping cabin per lot.

E4.4.5(a) The division of two (2) or more legally existing uses on a property resulting in no more than one dwelling and one sleeping cabin per lot may be considered if the may be considered if the resultant lots:

- *i) Comply with the existing lot of record criteria, as defined in the implementing Zoning By-law or Community Planning Permit By-law;*
- *ii) Meet all other applicable policies in this Plan; and*
- *iii) Are of a size and frontage that is in general character with other lots in the general area.*

The subject property contains two legal non-conforming dwellings that are permitted to be severed and located on separate lots. With more than 91.4 metres of frontage, each lot would be permitted up to 22.9 metres of cumulative dock and boathouse width, for a potential of up to 45.8 metres of cumulative width on the existing lot. A two-storey boathouse would also be permitted on each lot.

29.8 metres of cumulative first storey boathouse width and 42.8 metres of cumulative dock width is proposed, which is less than the total amount that would be permitted if the lot was severed. Furthermore, the proposed development plan includes only one two-storey boathouse, whereas a two-storey boathouse with sleeping cabin would be permitted on each lot if severed. The proposed

development plan provides less development that would be permitted if the lot was severed into north and south parts.

Section 9 of the Old Township Official Plan (2013) includes policies for docks and boathouses related to character and a desire to balance natural and built form.

> *B9.2 The following special policies apply to Category 1 (Large) lakes:*
> *c) the maximum width of docks shall be 25% of the lot frontage up to a maximum of 23 metres (75 feet). Boathouses are subject to further restrictions.*
>
> *B13.4 To maintain a balance of natural and built form, the maximum cumulative width of shoreline structures, including all docks, shall be the lesser of 25 percent or 23 metres (75 feet) of the lot's water frontage, with the exception of the following:*
> *e) large residential properties with severance potential, as determined by the Township, which shall generally be limited to 25 percent per minimum water frontage on potential lots.*

The proposed cumulative dock width will occupy approx. 15.8% of the straight-line frontage and 6.6% of the actual frontage. The proposed cumulative boathouse width will occupy 22.7% of the straight-line frontage and 4.6% of the actual frontage. Neither the dock or boathouse widths will exceed 25% of the by-law frontage or the actual frontage. The built form will not dominate the appearance of the natural form. The subject property is large and contains two dwellings with severance potential. Except for the 2.5 metre width of the small floating dock located at the point, the proposed dock and boathouse widths would comply on potential severed lots.

The New Township Official Plan (2023) contains numerous policies that are intended to ensure that the appearance of built form does not dominate the natural environment, that a natural buffer of the shoreline will be provided and character of the waterfront will be protected. Policies also recognizes that Lake Joseph will exhibit larger built forms and building types that are not in character with the smaller lakes.

> *D1.1(k) Ensure that development is appropriately setback and buffered from natural heritage features and areas and hydrologic features.*
>
> *E4.1(e) Natural form shall dominate the character of the Waterfront Area. Natural shorelines visually screen development viewed from the water and buffer uses. Shorelines shall be encouraged to be maintained in a predominantly natural state with tree cover and ground vegetation retained as development occurs. The height of any structure should be appropriate*

to its setting and terrain, including slope, tree cover, setbacks, and architecture and not exceed the height of the tree canopy.

E4.1(g) Where development, site alteration and construction and reconstruction on existing and new lots occurs in the Waterfront Area, it should complement the natural and built form and should enhance and protect those qualities that contribute to character.
E4.1(h) In order to ensure compatibility with existing development, new development, site alteration and construction and reconstruction on existing and new lots should have a physical character similar to or compatible with existing development in terms of scale, lot sizes, maximum building heights, and minimum setbacks.

E4.1(j) The Township recognizes that different lakes have different characters. The three (3) large lakes, Muskoka, Rosseau, and Joseph, generally exhibit larger built forms and building types which are generally not in character with the smaller lakes. Limiting density of buildings and structures in the Waterfront Area designation is important in protecting the character of the Waterfront Area. Many factors affect character in the Waterfront Area, such as number of structures, setbacks, shoreline vegetative buffers, height, built size, built form, shoreline structures and the historical lake development. Strict adherence to policies limiting density related to these factors is paramount.

The subject property has an extensive shoreline that is well-forested and naturally vegetated. The majority of the onshore development, including the existing sports court is not visible from lake views due to the significant vegetative shoreline buffer. The existing and proposed boathouses and the associated docks are not visible at the same time due to their location on opposites side of the island. This development configuration reduced the appearance of built form because the buildings cannot be viewed at the same time. The proposed lot coverage is very low density at less than 10% of the lot area and the majority of the lot and the frontage is undeveloped and in a natural state.

The existing and considerable shoreline buffer combined with the low density of development, more than 600 metres of actual shoreline, onshore building sizes and locations that are discrete, and the location on the boathouses and docks on opposites sides of the island will ensure that that built form does not dominate the appearance of the natural environment. The proposed will not adversely impact the character of the waterfront or the subject property.

The site alteration policies in the New Township Official Plan (2023) direct that natural form and character are to be protected and recognize courts can have negative impacts.

E5(b) It is recognized that this Plan strictly limits lot coverage in an effort to protect character and natural form, amongst other features, in the Waterfront Area. It is also recognized that development which does not contain a roof, such as sewage disposal systems, driveways, parking areas, sport courts, patios, sundecks, swimming pools can also result in extensive site alteration and tree removal, which may negatively impact character, natural form and the environmental integrity of properties.

The existing court is located at the central part of the island and is setback more than 46 metres from the closest part of the shoreline. Setbacks from other parts of the shoreline exceed 61 metres. The court is not visible from lake views due to the extensive shoreline vegetative buffer and it does not impact character, natural form. The low density development pattern combined with the location of the court on level terrain on a lot with large undeveloped areas will maintain the environmental integrity of the property.

The Old Township Official Plan (2013) does not define lot frontage, and consideration can be given to the actual frontage measurement, which for island lots provides a more accurate representation of the amount of shoreline visible from lake views.

The proposed Zoning By-law Amendment application has been reviewed against the applicable policies of the Township Official Plan is found to conform and does not conflict.

Township Muskoka Lakes Zoning By-law 2014-14

The subject property is zoned Waterfront Residential (WR4) on Schedule 20 of the Comprehensive Zoning By-law 2014-14 and is subject to site specific Zoning By-law amendments By-law 2012-149 and By-law 2021-061. The subject property is located on Lake Joseph, a Category 1 Lake on Table 1 'Classification of Lakes'.

The WR4 zone permits accessory structures, such as dock and boathouses, once a residential dwelling (main use) is established. The subject property contains two dwellings and is permitted accessory structures.

<u>Past Zoning Approvals</u>

The minimum lot area and frontage requirements in the WR4 zone are the dimensions of the lot that existed on the date the Zoning By-law was passed. In 2012, Eagle Island was severed into two lots and By-law 2012-149 was approved as a condition of severance (application no. B/47/12/ML), in part, to recognize the resultant area and frontage of the severed and retained lots. Section 1.i) of By-law 2012-

149 which requires the minimum lot area and frontage to be the approved severed and retained lots must continue to apply because the lot was severed after the Zoning By-law was passed.

Section 1.ii) of By-law 2012-149 identified the only permitted location for shoreline structures (dock and boathouses) on the subject property (severed lot) that was located outside the Type I Critical Fish Habitat mapping. It so happens that the proposed dock and boathouse are located in the same area identified in By-law 2012-149 that permitted shoreline structures.

By-law 2021-061 was approved, in part, to permit and restrict shoreline structures to a certain part of the southern shoreline, as part of a new dock and boathouse plan for the property. Section 1.ii) of By-law 2012-149, which restricted shoreline structures to part of the northern shoreline was repealed by By-law 2021-061 to allow shoreline structures on the southern shoreline.

The Dining Hall building that was approved though By-law 2021-061 will not be constructed and the associated zoning provisions are no longer required. By-law 2021-061 is proposed to be repealed to remove the permissions and definition for a Dining Hall, however there are certain other provisions that continue to be applicable and will be carried forward in the proposed by-law.

The permission for a sleeping cabin on a lot with two dwellings and the permitted location of the southern dock and boathouse in By-law 2021-061 will be carried forward in the proposed by-law because the approved dock on the southern shoreline has been constructed and plans for the two-storey boathouse with sleeping cabin are underway. Section 1.ii) of By-law 2012-149, which only permits shoreline structures on part of the northern shoreline, will also be repealed, because By-law 2021-061, which previously repealed By-law 2012-149 will now be repealed in the proposed by-law. The new dock and one-storey boathouse are proposed in the area that previously permitted shoreline structures in By-law 2012-149.

Dock and Boathouse Width

Section 4.1.7 of the WR4 zone contains the provisions for accessory structures over water and includes requirements to control the maximum dock and boathouse widths and lengths, maximum boathouse height, and minimum dock and boathouse setbacks. The proposed shoreline structures comply with the requirements of Section 4.1.7 except for the cumulative dock and first storey boathouse widths.

Section 4.1.7.12 and Table 4.1.7 limit the maximum cumulative dock and boathouse widths. The maximum dock width on a Category One lake is 25% of the lot frontage to a maximum of 22.9 metres.

The cumulative first storey boathouse width is limited to 16% of the lot frontage to a maximum of 22.9 metres.

The existing cumulative dock width, including the relocated small floating dock at the point, is 25.3 metres. The proposed additional dock width associate with the new boathouse is 17.5 metres, resulting in a cumulative dock width of 42.8 metres, which represents 22.7% of the straight line lot frontage and 6.6% of the actual frontage.

There is no existing boathouse located on the subject property, however the plans for a 15.3 metre wide two-storey boathouse on the southern shoreline are underway. The proposed one-storey boathouse on the northern shoreline is 14.5 metres wide, resulting in a cumulative first storey boathouse width of 29.8 metres, which represents 15.8% of the of the straight line lot frontage and 4.6 % of the actual frontage.

No special zoning provisions for boat access are provided for water access-only lots, however water access-only properties, such as the subject property, rely exclusively on docking for access purposes. All people, good, and material arrive by boat, and the need for adequate boat docking and storage is considerably different compared to the needs of mainland properties that are accessible by road with driveways and parking areas.

Sports Court

Section 3.23.3 requires a minimum 61 metre setback of sport court and recreational surfaces from the high water mark. The existing court is setback 46.6 metres from the high water mark. Approx. 25% of the court is setback more than 61 metres.

There was a previous tennis court located on Eagle Island in 2012 that was split between the two lots when the island was severed. The old tennis court was setback 43.5 metres from the high water mark at the closest point. When the island was severed in 2012 (application no. B/47/12/ML) the previous court was divided by the new lot line. To address this issue, a condition of severance required the tennis court be brought into conformity with the Zoning By-law by removal or re-locating the entire court on either the retained lot or severed lot with a side yard setback of at least 15 feet. It is unclear how this condition was fulfilled.

Section 11.171 defines 'Structure' to include sport courts and recreational playing surfaces, however unlike other structures that are regulated through Section 4.1.3.5 which includes permissions for legal non-complying structures, the is no such permission to relocate and reconstruct a

court at a reduced shoreline setback. Compliance with the 61 metre setback is required for any new court location regardless of the setback of a formerly existing legal non-compliant court. The removal of the old court will have also extinguished the legal non-complying status of the structure. Therefore, the existing court was constructed not in compliance with the minimum setback requirement. This application proposes to recognize the existing 46.6 metre setback to permit the continued use of the existing court.

The permission for a sleeping cabin above the previously approved two-storey boathouse on a lot with two dwellings will be carried forward in the proposed by-law, along with the building envelope for shoreline structures on the southern shoreline that was approved in By-law 2021-061. The minimum lot size requirements applied in By-law 2012-149 will also continue apply.

8. Conclusion:

The proposed dock and boathouse are located outside Type 1 fish habitat and have been reviewed through a Fish Habitat Evaluation. The sports court, although constructed with a reduced setback, maintains a substantial shoreline buffer and does not compromise shoreline character or ecological function of the property, and exceeds the targeted shoreline setback in Official Plan policies.

The proposed new boathouse and associated dock on the northern shoreline are located on the opposite side of island from the previously approved dock and boathouse on the southern shoreline. Due to this configuration the docks and boathouse will not be simultaneously visible, thereby limiting their visual impact of two-boathouses on one lot and preserving the natural aesthetic of the property. The shoreline of the subject property is extensive with a large amount of naturally vegetate frontage.

In terms of scale, the proposed cumulative dock width will occupy approx. 15.8% of the straight-line frontage and 6.6% of the actual frontage. The proposed cumulative boathouse width will occupy 22.7% of the straight-line frontage and 4.6% of the actual frontage. Neither the dock or boathouse widths will exceed 25% of the by-law frontage or the actual frontage. As a result, more than 90% of the shoreline will remain undeveloped and remain in a natural state, ensuring that the visual and ecological integrity of the waterfront is preserved. The natural appearance of the shoreline frontage will continue to dominate because

The property's severance potential further supports the proposed development. With two dwelling on one lot, the subject property could be severed into two separate lots. Each lot would be permitted 22.9 metres of dock and boathouse width for a total of 45.8 metres. The proposed dock 42.9 metres of dock width and 29.8 metres of boathouse are both less than the combined maximum permitted

width allowance for two lots. The proposed cumulative dock and boathouse widths are in keeping with the Official Plan and by-law requirements if the lot was severed.

The subject property is water access-only and relies exclusively on docking for access purposes. Due to a lack of parking area and driveway, and compared to mainland lots with road access, allowing increased dock and boathouse widths for water access properties is appropriate and necessary to support access and functionality.

The proposed development protects fish habitat and the natural character of the shoreline, with extensive vegetative buffers and building locations that minimize visual impact from lake views. Overall, the application supports the permitted low-density residential development of the subject property in a manner that is compatible with the surrounding community, respectful of the island's character, and protects the environment.

The repeal of the By-law 2021-061 to remove the approved Dining Hall building is appropriate, and it is also appropriate to carry forward the relevant provisions from By-law 2021-061 in the proposed by-law.

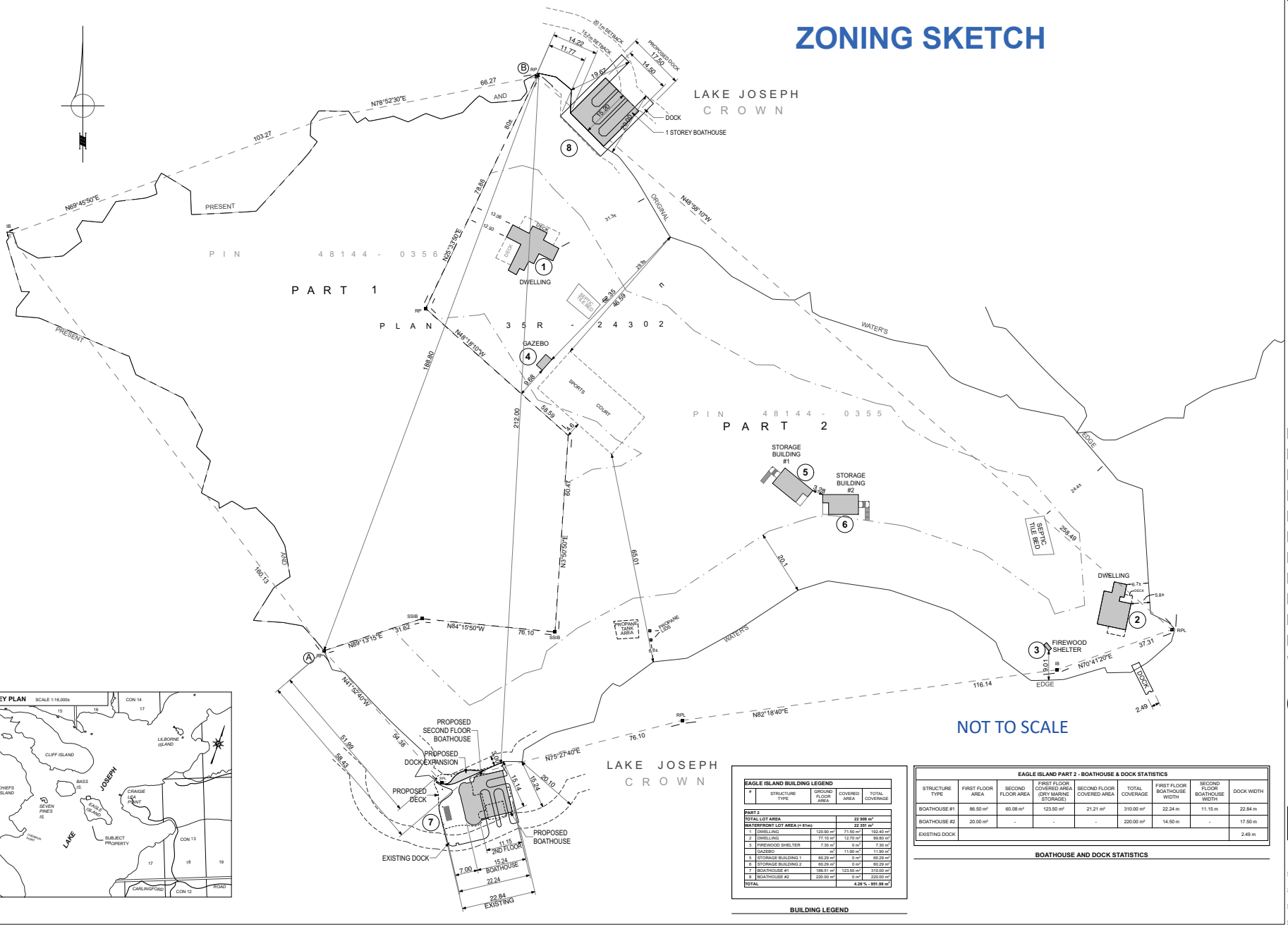
In my professional opinion, the proposed Zoning By-law Amendment application conforms with the Township and District Official Plans, is consistent with the Provincial Planning Statement, does not conflict with provincial policy, and represents good planning.

Respectfully submitted,



Rian Allen MSc, MCIP, RPP
Principal Planner
Allen Planning Consulting Inc.

ZONING SKETCH



EAGLE ISLAND BUILDING LEGEND

#	STRUCTURE TYPE	GROUND FLOOR AREA	COVERED AREA	TOTAL COVERAGE
PART 2				
TOTAL LOT AREA				**22 909 m²**
WATERFRONT LOT AREA (< 61m)				**22 391 m²**
1	DWELLING	120.90 m²	71.50 m²	192.40 m²
2	DWELLING	77.10 m²	12.70 m²	89.80 m²
3	FIREWOOD SHELTER	7.30 m²	0 m²	7.30 m²
	GAZEBO	m²	11.90 m²	11.90 m²
5	STORAGE BUILDING 1	60.29 m²	0 m²	60.29 m²
6	STORAGE BUILDING 2	60.29 m²	0 m²	60.29 m²
7	BOATHOUSE #1	186.51 m²	123.50 m²	310.00 m²
8	BOATHOUSE #2	220.00 m²	0 m²	220.00 m²
TOTAL				**4.24 % - 991.96 m²**

BUILDING LEGEND

EAGLE ISLAND PART 2 - BOATHOUSE & DOCK STATISTICS

STRUCTURE TYPE	FIRST FLOOR AREA	SECOND FLOOR AREA	FIRST FLOOR COVERED AREA (DRY MARINE STORAGE)	SECOND FLOOR COVERED AREA	TOTAL COVERAGE	FIRST FLOOR BOATHOUSE WIDTH	SECOND FLOOR BOATHOUSE WIDTH	DOCK WIDTH
BOATHOUSE #1	86.50 m²	60.08 m²	123.50 m²	21.21 m²	310.00 m²	22.24 m	11.15 m	22.84 m
BOATHOUSE #2	20.00 m²	-	-	-	220.00 m²	14.50 m	-	17.50 m
EXISTING DOCK								2.49 m

BOATHOUSE AND DOCK STATISTICS

GENERAL NOTES

13.05.2026	ISSUED FOR REVIEW
08.01.2026	ISSUED FOR REVIEW

CHECK AND VERIFY ALL DIMENSIONS AND EXISTING SITE CONDITIONS BEFORE PROCEEDING WITH THE WORK. DO NOT SCALE DRAWINGS. REPORT ANY DISCREPANCIES IMMEDIATELY TO THE ARCHITECT. ALL WORK IS TO BE PERFORMED ACCORDING TO THE ONTARIO BUILDING CODE (OBC) AND ONTARIO BUILDING CODE (OBC) SYLAWS.

ONTARIO ASSOCIATION OF ARCHITECTS
RICHARD MANN LICENCE 5169

PROJECT NORTH

richard mann architect inc.
153 Woodhaven Park Drive, Oakville, Ontario, L6L 4K4
www.richardmannarchitect.ca 905 339 5260

EAGLE ISLAND BOATHOUSE 2P2

PART 2, EAGLE ISLAND, LAKE JOSEPH
MUSKOKA LAKES ONTARIO P0C 1G0

SITE PLAN

DRAWING TITLE

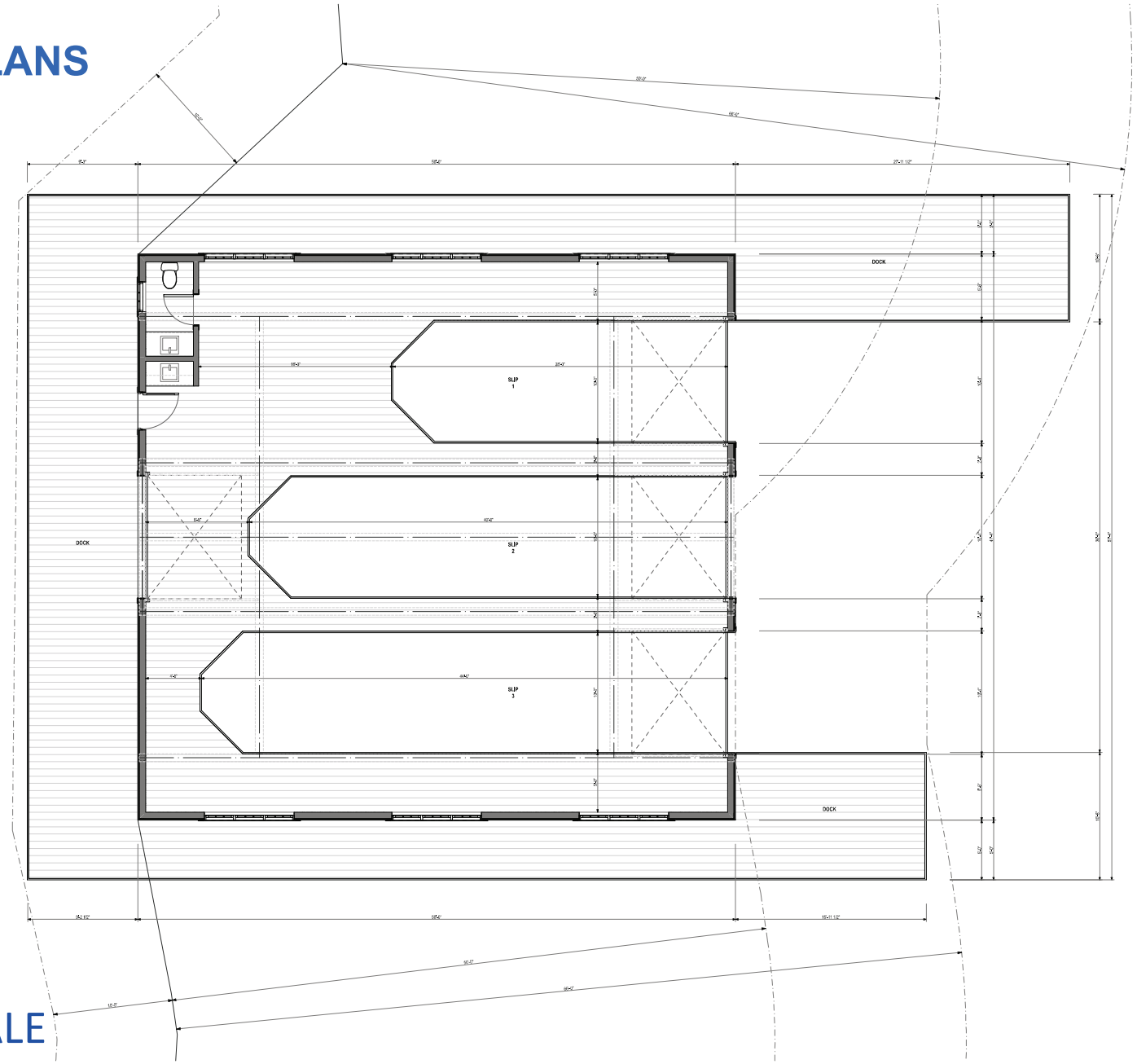
SCALE: AS SHOWN

DATE: 01.2026

DRAWN BY: RM

A0

FLOOR PLANS



NOT TO SCALE

GENERAL NOTES

ISSUED FOR REVIEW

richard mann architect inc.

153 Woodchaven Park Drive, Oakville, Ontario, L6L 4K4
www.richardmannarchitect.ca 905-339-5260

EAGLE ISLAND BOATHOUSE 2P2

PART 2, EAGLE ISLAND, LAKE JOSEPH
MUSKOKA LAKES ONTARIO P0C 1G0

DOCK LEVEL

DRAWING TITLE

AS SHOWN

SCALE

01.2026

DATE

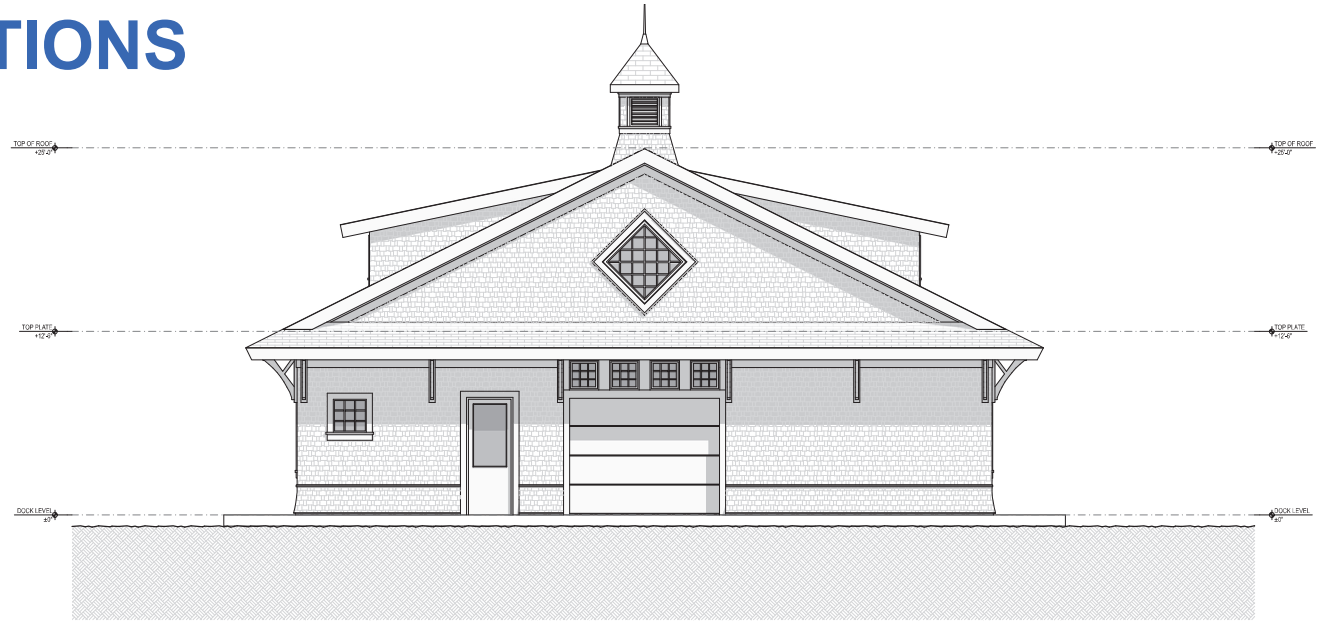
RM

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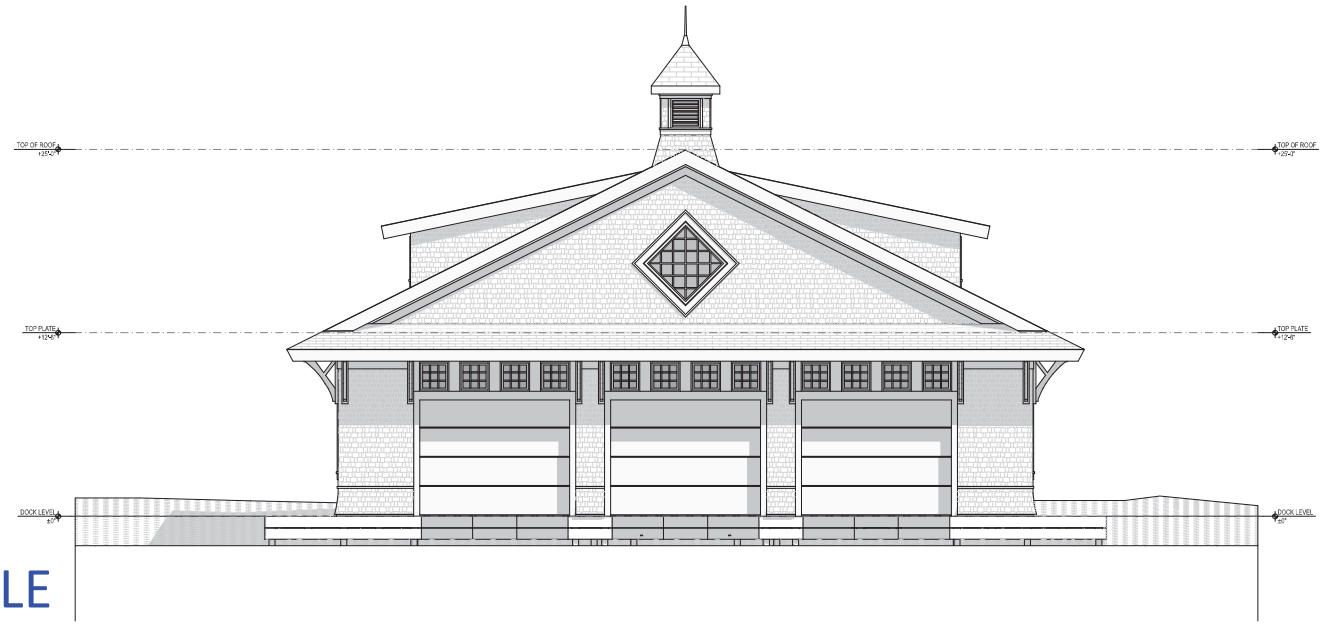
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FOR INFORMATIONAL PURPOSES ONLY

ELEVATIONS



2 SOUTH ELEVATION 1/4" = 1'-0"



1 NORTH ELEVATION 1/4" = 1'-0"

NOT TO SCALE

FOR INFORMATIONAL PURPOSES ONLY

GENERAL NOTES

ISSUED FOR REVIEW

CHECK AND VERIFY ALL DIMENSIONS AND EXISTING SITE CONDITIONS BEFORE PROCEEDING WITH ANY WORK. DO NOT SCALE DRAWINGS. REPORT ANY DISCREPANCIES IMMEDIATELY TO THE ARCHITECT. ALL WORK IS TO BE PERFORMED ACCORDING TO THE OWNER BUILDER GUIDE AND ALL OTHER APPLICABLE CODES AND BY-LAWS.

ONTARIO ASSOCIATION OF ARCHITECTS
RICHARD MANN
LICENCE
5169

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153 Woodchester Park Drive, Oakville, Ontario, L6L 4K4
www.richardmannarchitect.ca 905-330-5260

EAGLE ISLAND BOATHOUSE 2P2

PART 2, EAGLE ISLAND, LAKE JOSEPH
MUSKOKA LAKES ONTARIO P0C 1G0

ELEVATIONS

DRAWING TITLE

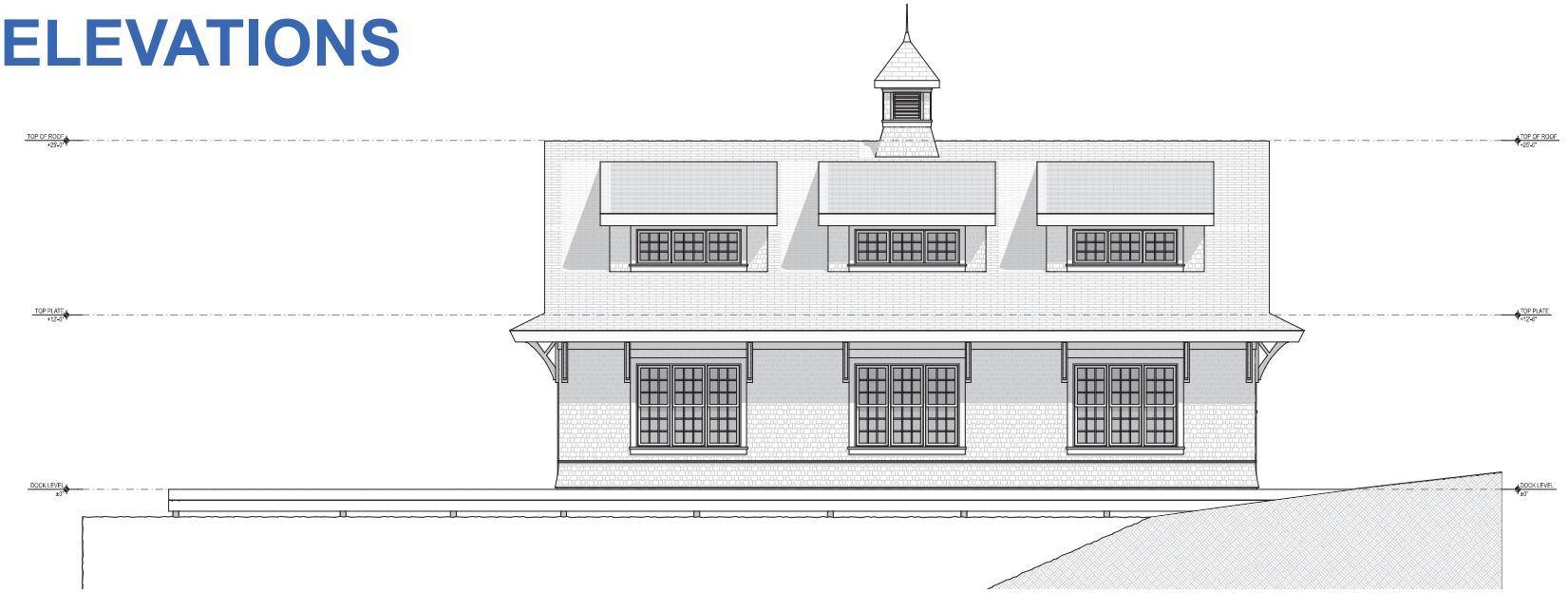
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DATE: 01.2026

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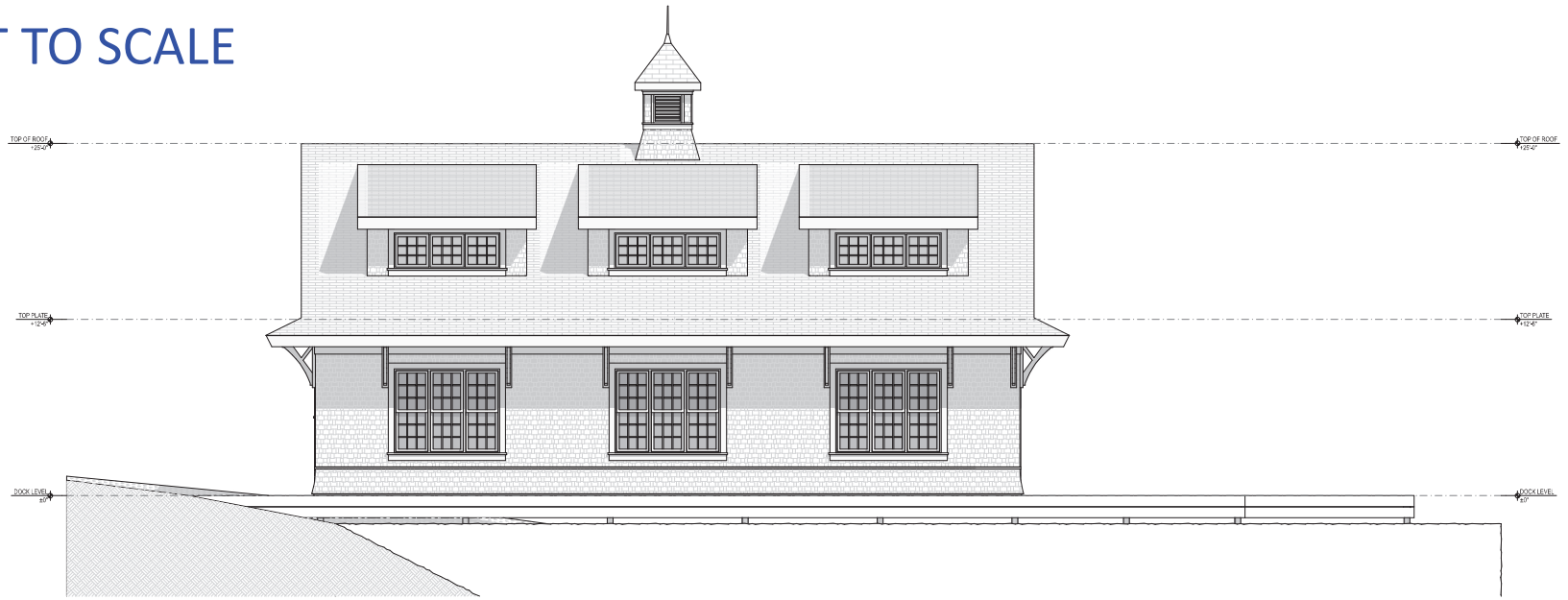
A5

ELEVATIONS



2 WEST ELEVATION 1/4" = 1'-0"

NOT TO SCALE



1 EAST ELEVATION 1/4" = 1'-0"

GENERAL NOTES

ISSUE	ISSUED FOR REVIEW

CHECK AND VERIFY ALL DIMENSIONS AND EXISTING SITE CONDITIONS BEFORE PROCEEDING WITH ANY WORK. DO NOT SCALE DRAWINGS. REPORT ANY DISCREPANCIES IMMEDIATELY TO THE ARCHITECT. ALL WORK IS TO BE PERFORMED ACCORDING TO THE LOCAL BUILDING CODE AND ALL OTHER APPLICABLE LAWS, GUIDES OR BY-LAWS.

PROJECT NORTH

ONTARIO ASSOCIATION OF ARCHITECTS
RICHARD MANN
LICENCE
5169

richard mann architect inc.

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EAGLE ISLAND BOATHOUSE 2P2

PART 2, EAGLE ISLAND, LAKE JOSEPH
MUSKOKA LAKES ONTARIO P0C 1G0

ELEVATIONS

DRAWING TITLE

SCALE: AS SHOWN

DATE: 01.2026

DRAWN BY: RM

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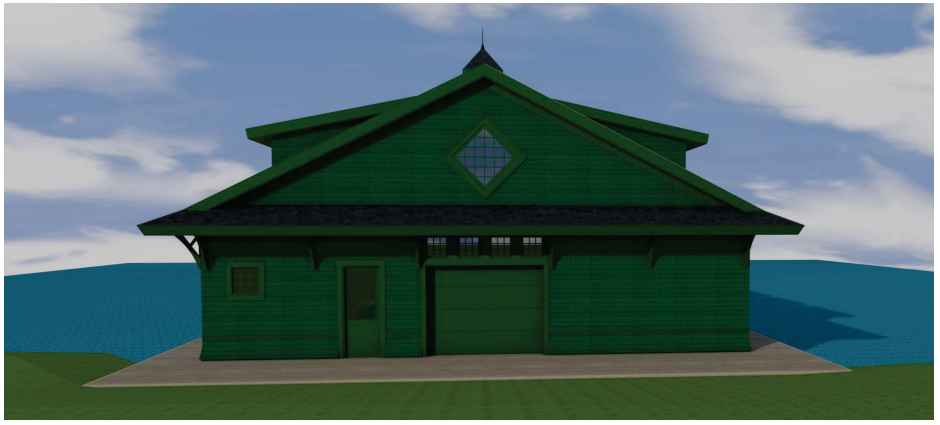
FOR INFORMATIONAL PURPOSES ONLY

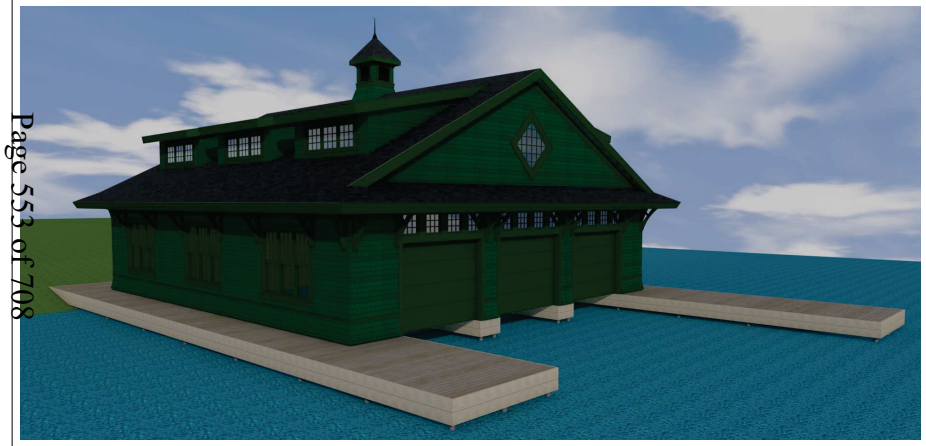
RENDERINGS

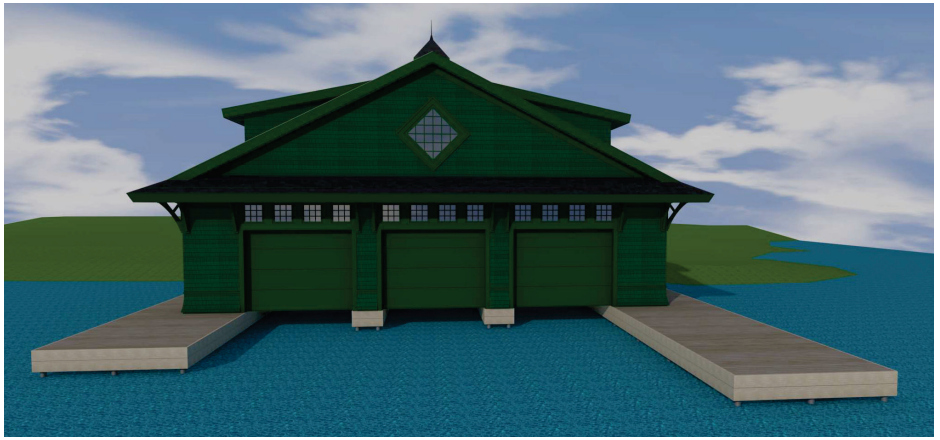












GENERAL NOTES

ISSUE	DATE	ISSUED FOR REVIEW

CHECK AND VERIFY ALL DIMENSIONS AND EXISTING SITE CONDITIONS BEFORE PROCEEDING WITH ANY WORK. DO NOT SCALE DRAWINGS. REPORT ANY DISCREPANCIES IMMEDIATELY TO THE ARCHITECT. ALL WORK IS TO BE PERFORMED ACCORDING TO THE ONTARIO BUILDING CODE, 2012 AND ALL OTHER APPLICABLE CODES OR BY-LAWS.

ONTARIO ASSOCIATION OF ARCHITECTS
RICHARD MANN LICENCE 5169

PROJECT NORTH

richard mann architect inc.

153 Woodhaven Park Drive, Oakville, Ontario, L6L 4K4
www.richardmannarchitect.ca 905-330-5260

EAGLE ISLAND BOATHOUSE 2P2

PART 2, EAGLE ISLAND, LAKE JOSEPH
MUSKOKA LAKES ONTARIO P0C 1G0

PERSPECTIVE VIEWS

DRAWING TITLE

SCALE: AS SHOWN

DATE: 01.2026

DRAWN BY: RM

SK1

NOT TO SCALE

FOR INFORMATIONAL PURPOSES ONLY

1 Bailey Street
Port Carling, ON P0B 1J0
E: planning@muskokalakes.ca P: 705-765–3156 F: 705-765-6755

PLANNING COMMITTEE
NOTICE OF PUBLIC MEETING
THE CORPORATION OF THE TOWNSHIP OF MUSKOKA LAKES

Take notice that the Council for the Corporation of the Township of Muskoka Lakes will be considering an application for a proposed Amendment to Zoning By-law 2014-14 pursuant to Section 34 of the Planning Act, R.S.O., 1990, Chapter P. 13, as amended.

File No.: ZBA-13/26
Roll No.: 5-4-089
By-law No.: To Be Assigned

Owner:	Mars Properties Holdings Ltd
Address:	1240 Ferndale Road
Description:	Part of Lot 28, Concession 6, Part 1, Plan 35R-24236 (Medora)
Zoning:	Waterfront Residential - Steep Slopes (WR5) Lake: Rosseau (Category 1 Lake) Schedule: 28
Meeting Date: Thursday, June 11th, 2026 at 9:00 a.m.	

Take further notice that this public meeting will be held in a hybrid forum with electronic Zoom participation, and in-person format for those wishing to attend in-person. The meeting will be held in the **Council Chambers, Municipal Office, 1 Bailey Street, Port Carling, ON**. Should you wish to view an electronic copy of the Notice of Public Meeting for the above-noted application, please visit https://www.muskokalakes.ca/planning-notices/ or scan the QR code. Please note there may be a delay when the physical notice signs are posted and when the electronic copy of the Notice is available online.

Explanation of the Purpose and Effect:

A Zoning By-law Amendment Application has been submitted to permit the construction of a dock.

The proposed zoning by-law amendment will also have the effect of repealing a portion of site-specific zoning By-law 2009-102 (approved by Council on September 1, 2009), which restricts maximum cumulative dock width to 25% of the lot frontage, to a maximum of 75 feet.

Exemption	ZBL 2014-14 Section(s)	Description	Permitted	Proposed	Relief	Proposal
A	4.1.7 & 4.1.7.12 a)	Maximum Permitted Cumulative Dock Width	75 ft.	105 ft.	30 ft.	Construct a Dock
B	Repeal Site-Specific	Maximum First and Second Storey Boathouse Width,	25% Cumulative Dock	Repeal Site-Specific By-	-	Repeal Site-Specific By-law 2009-

Exemption	ZBL 2014-14 Section(s)	Description	Permitted	Proposed	Relief	Proposal
	By-law 2009-102, Section 2. iv)	and Maximum Cumulative Dock Width	Width (to a Maximum of 75 Feet)	law 2009-102, Section 2. iv)		102, Section 2. iv)

A key map of the subject property, the applicant's site plan and any drawing, and a draft By-law are included in this notice.

For more information, please contact the Planning Division weekdays between 8:15 a.m. and 4 p.m. at the Municipal Office, or at planning@muskokalakes.ca or by phone at (705) 765-3156. **Please quote the file number noted above.**

How to Participate:

Submit Comments in Writing



If you wish to provide a response to this application, please submit comments to planning@muskokalakes.ca, deliver in-person, or mail to P.O. Box 129, 1 Bailey Street, Port Carling, ON, P0B 1J0. For correspondence to be included on the agenda, please submit your comments by: **June 4, 2026.**

Please note that comments can still be submitted after the agenda has been published. Personal information collected in response to this Notice of Public Meeting will be used to assist staff and Council to process this application and will be made public.

Active Participation In-Person or on Zoom



Hybrid meetings are held at 9:00 a.m. on the above-noted meeting date in Council Chambers at the Municipal Office. For more information about participating, please visit www.muskokalakes.ca/speaking-at-a-meeting

Watch the Meeting Online



You can access the meeting from YouTube on the Township of Muskoka Lakes YouTube Channel. If the live webcast fails, the meeting recording will be posted under the Government Portal on www.muskokalakes.ca

FAILURE TO PARTICIPATE IN MEETING: If you do not participate in the meeting it may proceed in your absence and, except as otherwise provided in the Planning Act, you will not be entitled to any further notice in the proceedings.

REQUIREMENT FOR OWNERS OF MULTI-TENANT BUILDINGS: Upon receiving this Notice, owners of multi-tenant buildings with seven (7) or more residential units are asked to post this Notice in a location that is clearly visible to all tenants (i.e. building or community notice board), in accordance with O.Reg 545/06.

NOTICE OF PASSING & APPEALS: If you wish to be notified of the decision of the Council of the Township of Muskoka Lakes in respect to this application, you must make a written request to planning@muskokalakes.ca.

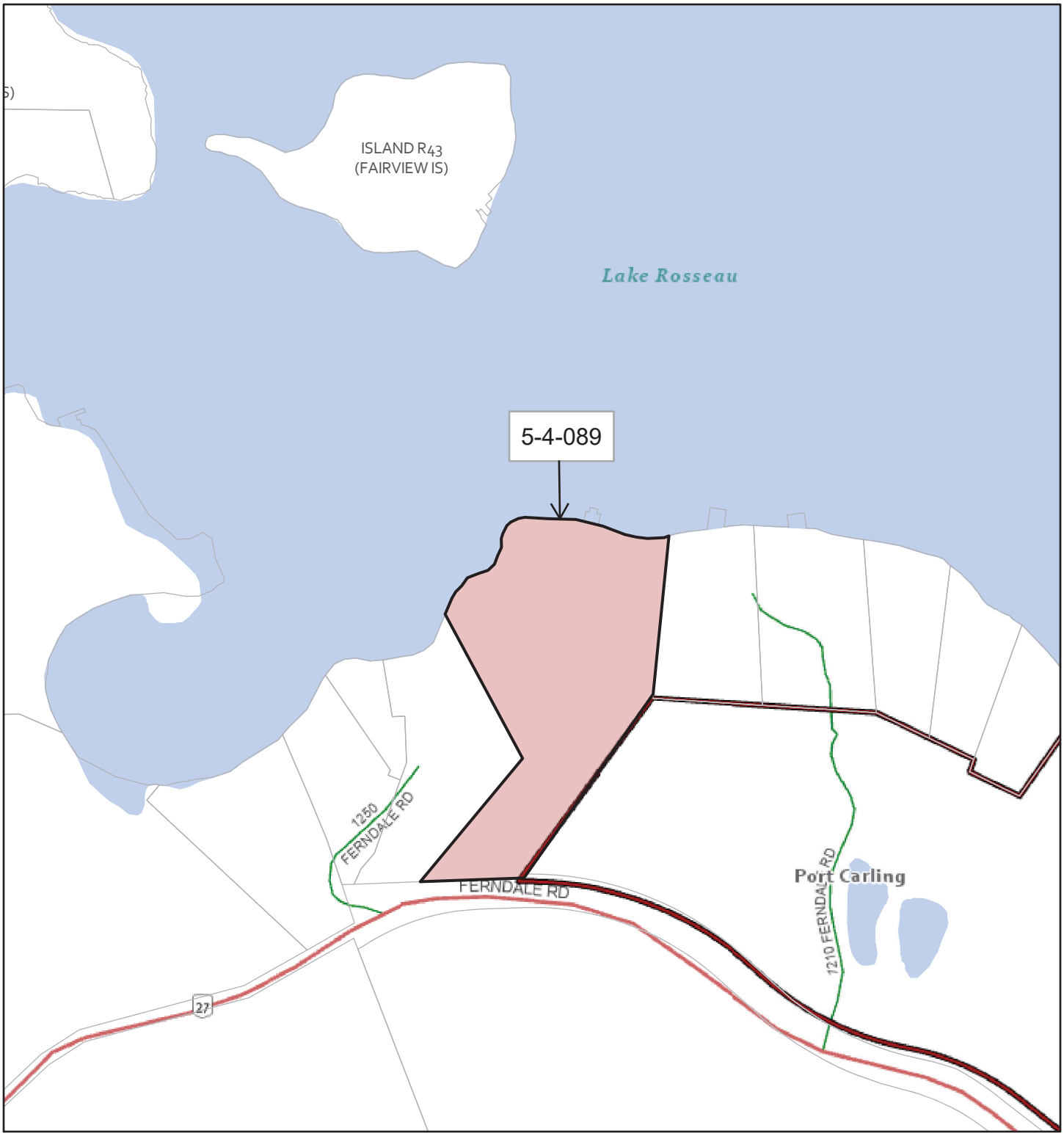
Furthermore, if a person or public body would otherwise have an ability to appeal the decision of the Council of the Township of Muskoka Lakes to the Ontario Land Tribunal but the person or public body does not make oral submissions at a public meeting or make written submissions to the Township of Muskoka Lakes before the by-law is passed, the person or public body is not entitled to appeal the decision. The person or public body may not be added as a party to the hearing of an appeal before the Ontario Land Tribunal unless, in the opinion of the Tribunal, there are reasonable grounds to do so.

Notwithstanding the above, subsection 34(19) of the Planning Act defines the parties that are eligible to appeal the decision to the Ontario Land Tribunal.

Dated at the Township of Muskoka Lakes this 21st day of May, 2026.

Crystal Best-Sararas, Clerk
Corporation of the Township of Muskoka Lakes

Key Map, ZBA-13/26 (MARS PROPERTIES HOLDINGS LTD.)



3/27/2026, 8:46:36 AM

NOT A PLAN OF SURVEY. FOR INFORMATIONAL PURPOSES ONLY.

1:6,138

0 0.04 0.07 0.14 mi

0 0.05 0.1 0.2 km

Parcel: Assessment
District Municipality
Area Municipality
Geographic Township
Settlement Areas
Urban Centre
Civic Addresses
Road Network
District
Private
Wetland With Significance
Evaluated-Provincial
Evaluated-Other
Stream
Waterbody
Major Lake
Canada_Hillshade
World_Hillshade

Sources: NRCan, Esri Canada, and Canadian Community Maps contributors., Sources: Esri, Vantor, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, and the GIS user community

Staff Report PLAN-2026-084
Planning Committee
June 11, 2026

TO: **Chair Bosomworth and Members of Planning Committee**

AUTHOR: **Teslyn Heron, Planner**

SUBJECT: **ZBA-13/26 (MARS PROPERTIES HOLDINGS LTD), Part of Lot 28, Concession 6, Part 1, Plan 35R-24236 (Medora), Civic Address: 1240 Ferndale Road, Roll #: 5-4-089**

RECOMMENDATION

THAT Zoning By-law Amendment Application ZBA-13/26 (MARS PROPERTIES HOLDINGS LTD), be DENIED.

REPORT HIGHLIGHTS

This report provides an overview and analysis of Zoning By-law Amendment Application ZBA-13/26 (MARS PROPERTIES HOLDINGS LTD). Through policy analysis, a site visit, and desktop review of available information, staff have concluded that the proposed new dock is consistent with the Provincial Planning Statement and conforms to the District of Muskoka Official Plan. The requested rezoning however does not conform to the 2013 and 2023 Township of Muskoka Lakes Official Plans.

BACKGROUND

The purpose and effect of proposed Zoning By-law Amendment Application ZBA-13/26 is to permit the construction of a dock which will exceed the maximum permitted cumulative dock width requirements.

The proposed draft by-law will also have the effect of repealing site-specific zoning by-law 2009-102 and carrying forward the relevant sections. By-law 2009-102 restricts the maximum permitted dock width to 25% of the lot frontage, up to a maximum of 75 feet on the subject property. The current application proposes the construction of a new dock which will result in a cumulative dock width which exceeds this site-specific provision. This provision is to be replaced by the proposed dock configuration as requested through the current application. By-law 2009-102 permits the reconstruction of a dwelling and attached gazebo to be 50 feet for the dwelling and 2 feet for the gazebo, the maximum permitted boathouse length to be 59 feet, the second storey of the boathouse to contain a sleeping cabin (maximum size 650 sq. ft. of habitable floor area plus a maximum of 250 sq. ft. of covered area) and the maximum permitted first storey of the boathouse width to be 16% and second storey width to be 13%. The applicants are proposing to carry these

permissions forward as part of the proposed draft by-law.

Technical details of the application are summarized in Table 1 below.

Table 1: Summary of Necessary Exemptions

Exemption	ZBL 2014-14 Section(s)	Description	Permitted	Proposed	Relief	Proposal
A	4.1.7 & 4.1.7.12 a)	Maximum Permitted Cumulative Dock Width	75 ft.	105 ft.	30 ft.	Construct a Dock
B	Repeal Site-Specific By-law 2009-102, Section 2. iv)	Maximum First and Second Storey Boathouse Width, and Maximum Cumulative Dock Width	25% Cumulative Dock Width (to a Maximum of 75 Feet)	Repeal Site-Specific By-law 2009-102, Section 2. iv)	-	Repeal Site-Specific By-law 2009-102, Section 2. iv)

The site-specific property detailed are outlined in Table 2 below.

Table 2: Site-Specific Property Details

Matter	Comment
Official Plan Designation (November 2023 Consolidation)	Waterfront Area
Official Plan Designation (April 2013 Consolidation)	Waterfront
Zoning (ZBL 2014-14, as amended)	Waterfront Residential – Steep Slopes and/or Narrow Waterbody (WR5)
Zoning Schedule	28
Lot Frontage	± 552 Feet
Lot Area	± 283,188 sq. ft. (6.5 Acres)
Access	Ferndale Road – District, Yea-Round Maintained
Servicing	Lake or Well/Septic
Abutting Zoning Categories	Waterfront Residential – No Constraints (WR1), Environmental Protection (EP2)
Original Shore Road Allowance	N/A
Lake/River Category	1 (Lake Rosseau)
Site Plan Control	Waterfront Residential (WR5) Zone is Automatically Subject to Site Plan Control, However, the Proposed Dock is Exempt.



Figure 1: Enlarged zoning sketch.

Note: The reference on this sketch to the old dock shows the orientation of a dock that was visible in the Township's 2008 aerial photograph. This dock was not present in the Township's 2013 aerial photograph and has been absent from the subject shoreline for at least 20 years.

ANALYSIS

Official Plans

The application was reviewed based on the policies in effect at the time the application was deemed complete. At the time that the subject application was deemed complete, parts of the Township's 2023 Official Plan were under appeal. Where relevant policies were under appeal and such policies were not yet in effect, staff refer to applicable policies of the Township's 2013 Official Plan.

Public Consultation

Notice of this public meeting to be held under the Planning Act for this application was circulated 21 days in advance of this scheduled June 11, 2026 meeting date and four (4) written departmental comments have been received at the time of writing (see Table A3 below). Comments were received from Developmental Services, Operational Services, Legislative Services and Emergency Services indicating no objection to the application. Comments were also received from

the District Municipality of Muskoka indicating no objection to the application. Any written comments received up to June 4, 2026 will be attached to Committee's Agenda under Section 16.

Proposed Exemption A – Maximum Cumulative Dock

Planning staff recommend that the requested exemption be denied. In making this determination, key considerations include the following:

- Per Section E1 b) of the Township's 2023 Official Plan, an objective of the Plan is to ensure the protection of the exceptional visual characteristics of the lakes, rivers and shoreline areas and ensure that the natural landscape predominates the human built form in the Waterfront Area.

- The Township's 2023 Official Plan and Comprehensive Zoning By-law establish maximum widths for shoreline structures with the general intent and purpose to control density and ensure built form does not dominate the shoreline. Section E4.3.3 d) of the Township's 2023 Official Plan directs that the maximum shoreline structure width permitted on a Category 1 Lake (Lake Rosseau) is 25% of the lot frontage up to a maximum cumulative width of 75 feet. On this property, with a straight line frontage of 551 feet, the maximum permitted cumulative shoreline structure width is 75 feet. In this case, the existing cumulative dock width is 75 feet, which equates to 13.6 % of the lot's frontage. The requested exemption is to permit the construction of a new dock that is 30 feet in width, which will result in a cumulative dock width of 105 feet, or 19% of the lot's frontage. The numerical extent of the requested relief is 30 feet, which equates to 5.4% of the lot's frontage.

- 2013 Official Plan Policy B13.4 states that the maximum cumulative width of shoreline structures, including all docks, shall be the lesser of 25% or 75 feet of the lot's water frontage. The Official Plan provides an exception for large residential properties with severance potential, as determined by the Township, which shall generally be limited to the percentage implemented through the implementing zoning by-law per minimum water frontage on potential lots.

- 2023 Official Plan Policy L15.2 states that the maximum cumulative width of shoreline structures, including all docks, on Category 1 Lakes shall be the lesser of 25% or 75.0 feet of the lot's water frontage, with the exception of large residential properties with severance potential, as determined by the Township, which shall generally be limited to the percentage implemented through the implementing zoning by-law per minimum water frontage on potential lots.

  In this case, the application was submitted prior to the appeals of the Township's 2023 Official Plan being resolved therefore the application in regard to severance potential has been analyzed using the Township's 2013 Official Plan policies. The 2013 Official Plan would potentially allow for the lot to be severed as it meets the minimum requirements however if an application was submitted to sever the land today, it would be analyzed using the 2023 Official Plan policies and the subject property would not meet the minimum requirements to sever.

- Per Sections E4.3.3 e) and E4.4.2 b) of the Township's 2023 Official Plan, the minimum lot area and frontage requirements on a Category 1 Lake with >40% and <60% slopes are 1.98 acres and 393.7 feet of lot frontage. The subject lands could accommodate the required acreage for potential severance but would not be able to accommodate the required lot frontage. Accordingly, staff are of the opinion that the proposed development does not meet any of the criteria outlined in Section L15.2 of the Township's 2023 Official Plan.

- The existing cumulative dock width was also restricted to a maximum of 75 feet through site-specific By-law 2009-102. The existing boathouse and dock (BP-2009-0894) were constructed in accordance with this site-specific by-law. It is worth noting that at the time the site-specific by-law was approved to permit the existing boathouse and associated dock, the approval was contingent upon a previously existing dock, very similar in shape and size to the proposed dock today, being removed (see Figure 1).

- In considering the contour of the shoreline abutting the subject lands (i.e.: not a peninsula or island), the existing two storey boathouse, existing associated dock and the proposed dock will be visible at the same time when viewed from the lake results in built form that is dominating over the natural environment.

- It was noted during staff's site visit that there is an as-built boatlift (as shown below in Figure 2), has not been shown on the submitted zoning sketch. As per the Township's Zoning By-law, boatlifts contribute to cumulative dock width. The as-built boatlift is not compliant with site-specific By-law 2009-102, and is not compliant with Sections 4.1.7 and 4.1.7.12 of Zoning By-law 2014-14 and therefore is an enforcement matter. The property owner should have the boatlift structure removed or seek the appropriate relief to bring it into compliance with the Township's Zoning By-law to avoid potential Building and/or By-law orders.



Figure 2: Existing boatlift.

- Section N3 stipulates criteria that Council (and Planning Committee) shall consider when considering zoning amendment applications, which include but are not limited to: cumulative impacts on such matters as the environmental, visual/aesthetics, and lake character; impact of decisions on future development in the Township, in terms of setting a negative precedent; setback from the lake; buffering from the lake; visual impact; and impact on the natural shoreline. Shoreline structures, unlike land-based buildings/structures, are unable to be visually buffered by plantings, making their visual appearance more significant.

- Numerous policies in the Township's 2013 Official Plan encourage shorelines to be maintained in a predominantly natural state with tree cover and ground vegetation extending across a property's shoreline to a target depth of 50 feet. Policy B.6.5 from the Township's 2013 Official Plan explains that the role of naturally vegetated shorelines in buffering waterbodies from erosion, siltation and nutrient migration is critical to the protection of water quality and supports improvements upon the natural state of shoreline buffers during redevelopment.

  In this case, the subject property is well vegetated. However, the proposed shoreline structure development will be entirely visible from the lake.

Proposed Exemption B – Repeal Site Specific By-law 2009-102

Given the above analysis related to maximum permitted cumulative dock width and staff's recommendation to deny this Maximum Permitted Cumulative Dock Width exemption, this Exemption is no longer applicable and staff recommend it be denied accordingly.

General Analysis

Site visit photos, property constraints and past planning approvals, and policy considerations are included in an appendix to this report.

PREPARATION

Original signed by T. Heron
Prepared By
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Approved By
Emily Crowder
Senior Planner
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Original signed by S. Stone
Approved By
Steve Stone
Manager of Planning
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SStone@muskokalakes.ca

Original Signed by D. Pink
CAO Acknowledged
David Pink
Chief Administrative Officer
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DPink@muskokalakes.ca

APPENDIX

A1: Property Constraints

Matter	Comment
Species at Risk (SAR)	SAR may be encountered in the area. More information regarding SAR can be found at www.ontario.ca/SpeciesAtRisk. Property owners should consult the Ministry of the Environment Conservation, and Parks (MECP) to ensure any proposed development will not have any adverse impacts on SAR or SAR habitat. Given the applicant's statutory obligations under the *Endangered Species Act, 2007*, an evaluation of potential habitat of endangered and threatened species and impacts has not been completed, however, one can be requested by Committee if desired.
Fisheries Resources	The subject land fronts onto an area of Lake Rosseau that has been identified by the MNRF as Type II (General) Fish habitat. Type I Fish Habitat is generally known to be sensitive to the potential impacts of development and can include spawning habitat, whereas Type II Fish Habitat is not limiting to fish populations. Given statutory obligations under the Fisheries Act, it is the responsibility of applicants to confirm, through a self-assessment, if any future development/redevelopment will trigger a requirement for a review by the Department of Fisheries and Oceans (DFO) as laid out in Guidelines for Projects Near Water (http://www.dfo-mpo.gc.ca/pnw-ppe-index-eng.html). An evaluation of potential impacts to fish and fish habitat has not been completed, however one can be requested by Committee if desired.

A2: Site Visit Photos, May 26th, 2026



Figure 1A: Existing two-storey boathouse.



Figure 2A: Existing dock associated with the existing two-storey boathouse..



Figure 3A: Approximate location of new proposed dock relative to the location of the existing

boathouse.



Figure 4A: Approximate location of proposed dock.

A3: Agency and Public Comments Submitted at Report Writing

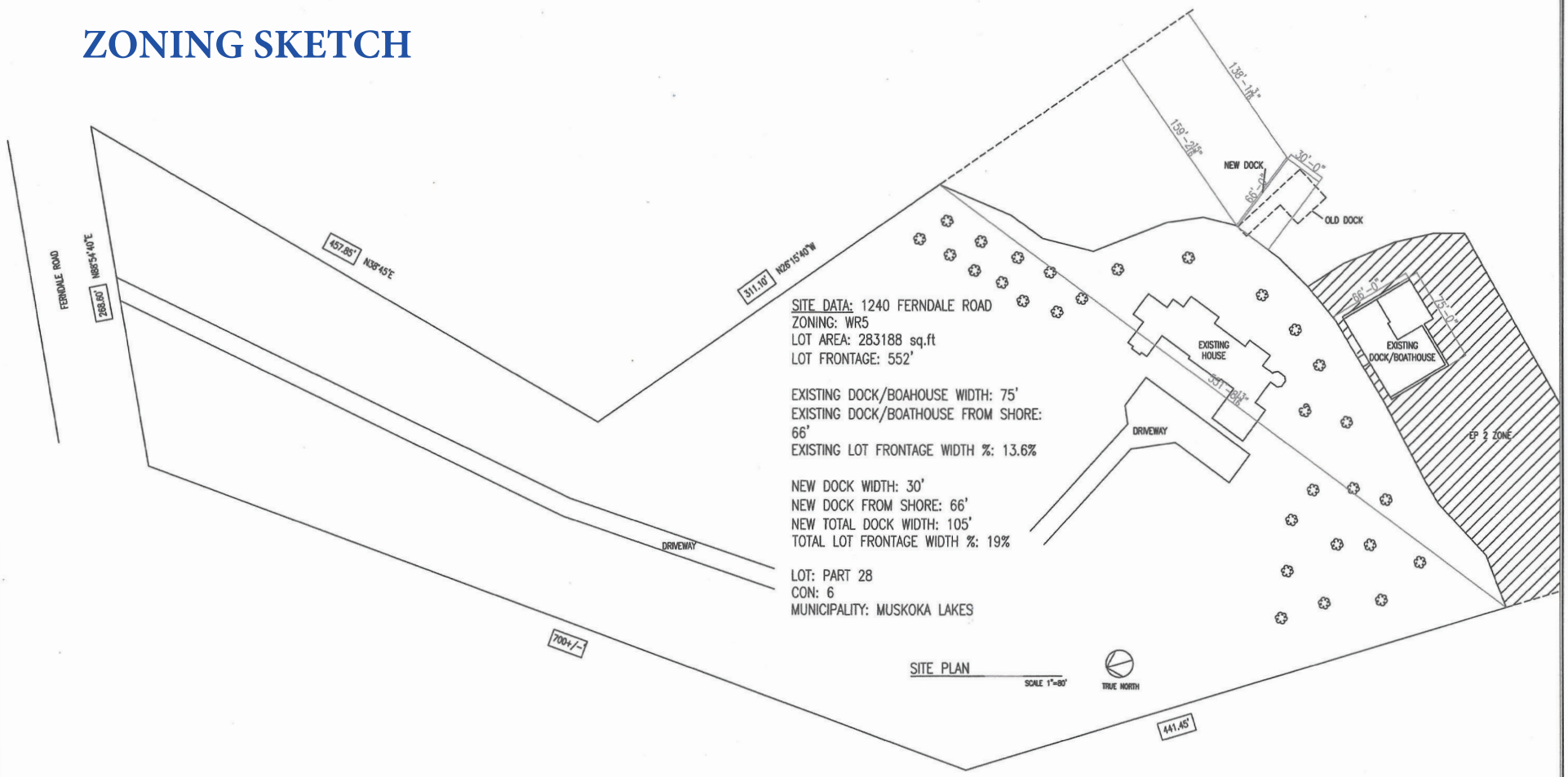
Agency	No Objection	Objection	Comments
District Municipality of Muskoka	✓		No objection.
Township of Muskoka Lakes, Development Services Division	✓		No comments.
Township of Muskoka Lakes, Operational Services	✓		No comments.
Township of Muskoka Lakes, Emergency Services	✓		No comments.

Township of Muskoka Lakes, Legislative Services	✓		No comments.
Public			
			No comments received at the time of writing.

A4: Planning Policy

Provincial Planning Statement
The Provincial Planning Statement, 2024 (PPS) provides policy direction on matters of provincial interest related to land use planning and development. The subject lands are identified as Rural Lands in the PPS and the application is consistent with applicable policies.
District of Muskoka Official Plan
The subject lands are designated Waterfront Area in the District of Muskoka Official Plan. The District Municipality of Muskoka is a commenting agency in regard to Provincial and District interests. Comments from the District indicate no objection to the application.
Township of Muskoka Lakes Official Plan (Approved April 2013)
The Township's 2013 Official Plan designates the subject lands as Waterfront and the application does not conform with the applicable policies of this Plan.
Township of Muskoka Lakes Official Plan (Adopted October 12, 2022, Approved November 20, 2023)
The Township's 2023 Official Plan designates the subject lands as Waterfront Area and the application does not conform with the applicable in force (un-appealed) policies of this Plan.

ZONING SKETCH



NOT TO SCALE

DATE ISSUED:

THE UNDERSIGNED HAS REVIEWED AND TAKES RESPONSIBILITY FOR THIS DESIGN AND HAS THE QUALIFICATIONS AND MEETS THE REQUIREMENTS SET OUT IN THE ONTARIO BUILDING CODE TO DESIGN THE WORK SHOWN ON THE ATTACHED DOCUMENTS.

QUALIFICATION INFORMATION
REQUIRED UNLESS DESIGN IS EXEMPT UNDER SUBSECTION 3.2.4 OF DIVISION C OF THE ONTARIO BUILDING CODE

JOHN JARICK — 24809
NAME — SIGNATURE — BCIN

REGISTRATION INFORMATION
REQUIRED UNLESS DESIGN IS EXEMPT UNDER SUBSECTION 3.2.4 OF DIVISION C OF THE ONTARIO BUILDING CODE

FIRM NAME — BCIN

NO.	ISSUED	DATE	BY

NO.	REVISIONS	DATE	BY

PROJECT NORTH:

OWNER:
MAC MCKENNA
LOT, CON

MUNICIPALITY:
MUSKOKA LAKES

PROJECT NAME:
NEW DOCK

DRAWN BY:
JOHN JARICK

SCALE:
1"=80'

DATE:
JAN.20/2026

DATE OF ISSUE:

JJ DESIGN AND CONTRACTING
JOHN JARICK
ARCHITECTURAL TECHNOLOGIST
2676 MUSKOKA ROAD 169
TORRANCE, ONTARIO
POC 1MO
TEL: (705) 644-2072
EMAIL: jj_jarick@hotmail.com

DRAWING TITLE:
SITE PLAN

PROJECT NO:

DRAWING NO:
A1.01

THE CORPORATION OF THE TOWNSHIP OF MUSKOKA LAKES

BY-LAW NUMBER 2026-XXX

Being a by-law to amend Comprehensive Zoning By-law 2014-24, as amended, in the Township of Muskoka Lakes

WHEREAS the authority to pass this by-law is provided by Section 34 of the Planning Act, R.S.O. 1990, Chapter P.13 and amendments thereto;

AND WHEREAS By-law 2014-14 was enacted by the Corporation of the Township of Muskoka Lakes to regulate land use within the Municipality;

AND WHEREAS the Council of the Corporation of the Township of Muskoka Lakes deems it advisable to further amend By-law 2014-14;

NOW THEREFORE THE COUNCIL OF THE CORPORATION OF THE TOWNSHIP OF MUSKOKA LAKES ENACTS AS FOLLOWS:

1. Section 12 of By-law 2014-14 is hereby further amended by the addition of the following subsection:

87-XXXX i) The lands affected by this amendment are described as Part of Lot 28, Concession 6, (in the former Township of Medora), now in the Township of Muskoka Lakes, more particularly described as Part 1, Plan 35R-24236, as shown hatched on Schedule I to By-law 2026-XXX.

ii) Despite the provisions of Sections 4.1.7 and 4.1.7.12 a) of Zoning By-law 2014-14, as amended, for those lands described above, the maximum permitted cumulative dock width shall be 105 feet, as shown in the location and extent of Schedule II to By-law 2026-XXX.

2. Schedules I and II attached hereto are hereby made part of this By-law.

3. All other provisions of By-law 2014-14 apply. To the extent of any conflict between By-law 2026-XXX and By-law 2014-14, as amended, the provisions of By-law 2026-XXX shall apply.

4. REPEAL OF BY_LAWS

4.1 By-law 2009-102, Section 2. iv) of the Corporation of the Township of Muskoka Lakes is hereby repealed.

5. That this by-law shall come into force and take effect _____, 2026.

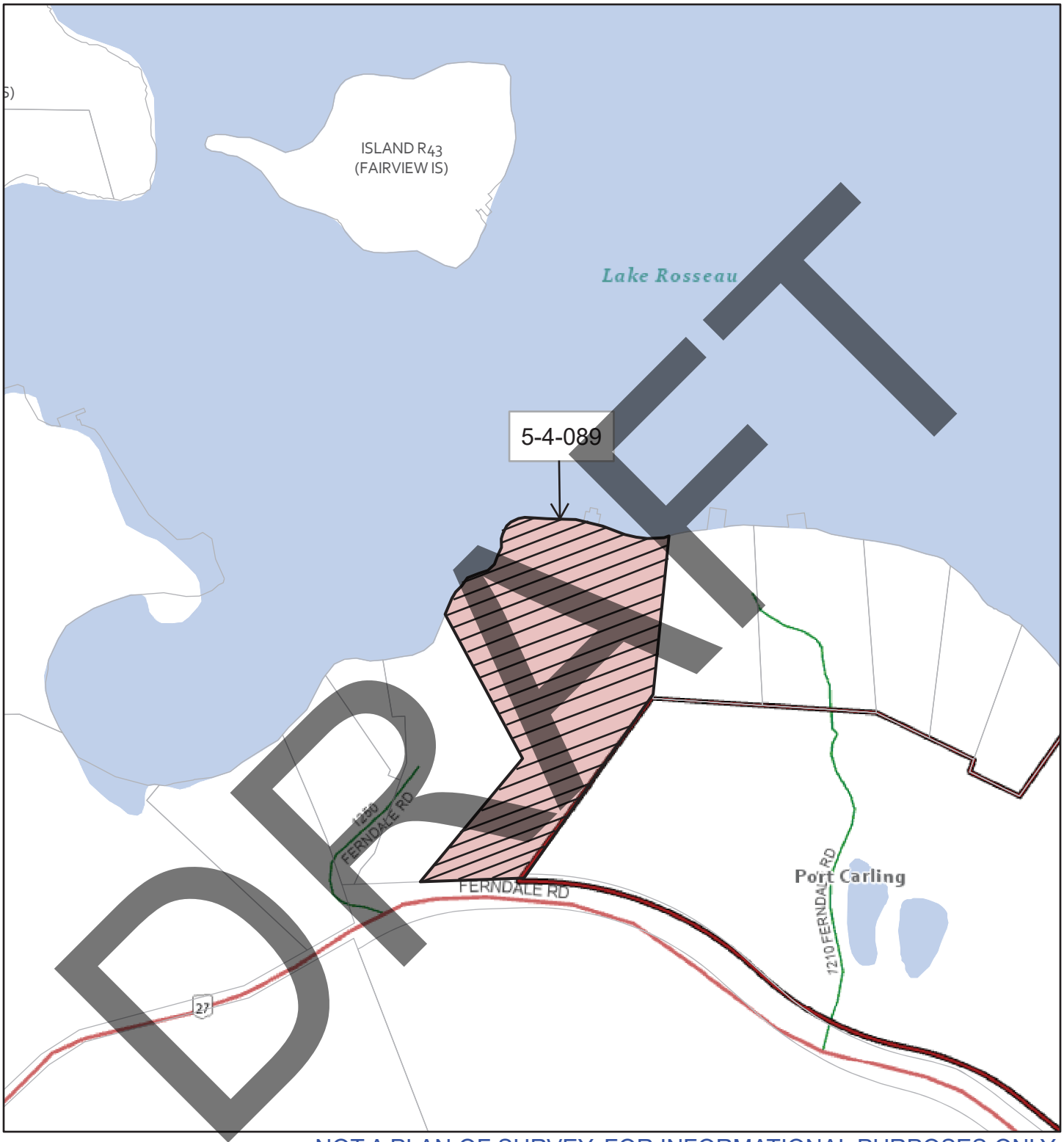
Read a **first, second** and **third time** and **finally passed** this **__th day of _____, 2026.**

_____
Mayor Peter Kelley

_____
Crystal Best-Sararas, Clerk

DRAFT

SCHEDULE I TO BY-LAW 2026-XXX



3/27/2026, 8:46:36 AM

NOT A PLAN OF SURVEY. FOR INFORMATIONAL PURPOSES ONLY.

1:6,138

0 0.04 0.07 0.14 mi

0 0.05 0.1 0.2 km

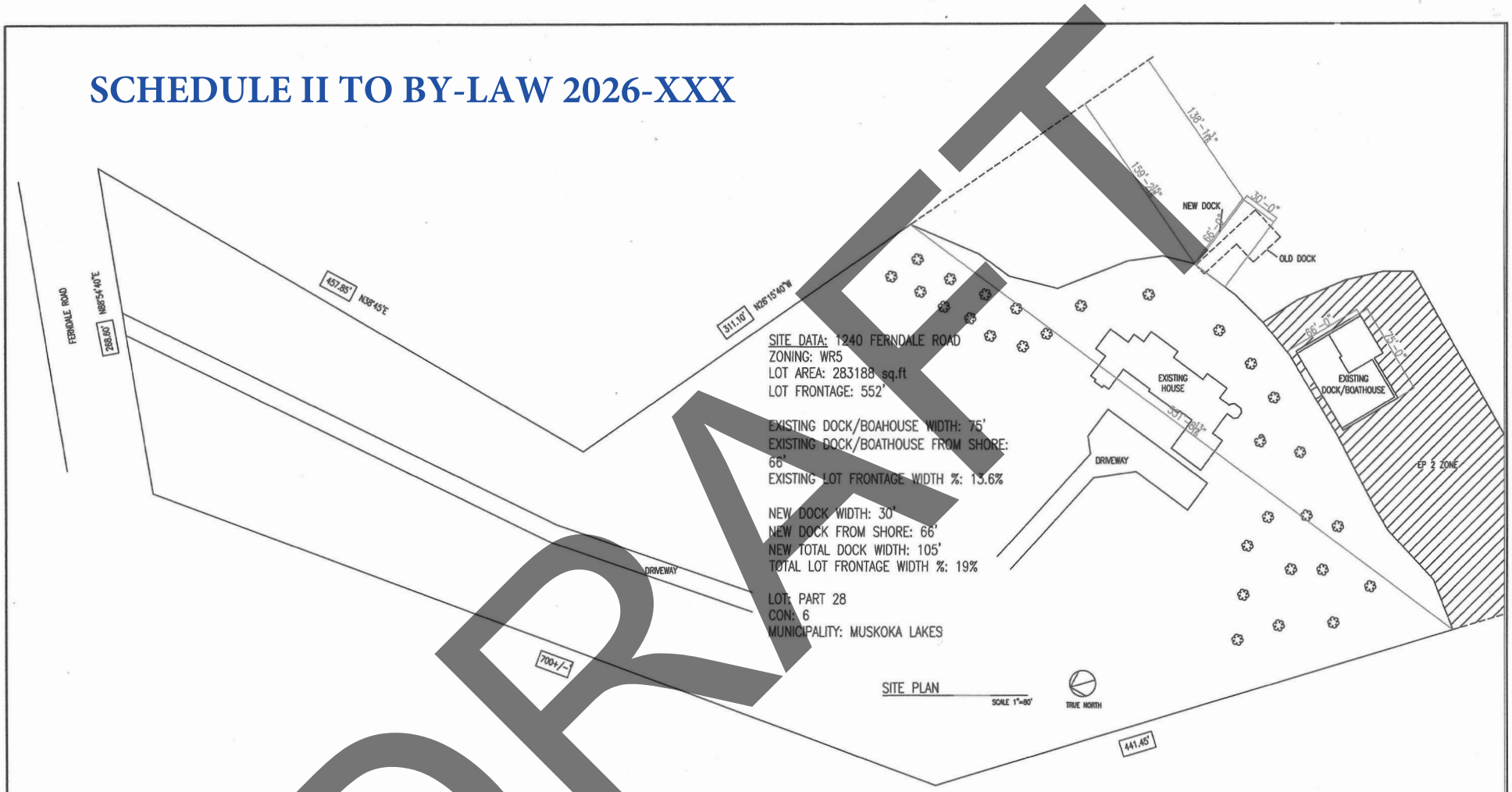
Parcel: Assessment
District Municipality
Area Municipality
Geographic Township
Settlement Areas
Urban Centre

Civic Addresses
Road Network
District
Private
Wetland With Significance
Evaluated-Provincial

Evaluated-Other
Stream
Waterbody
Major Lake
Canada_Hillshade
World_Hillshade

Sources: NRCan, Esri Canada, and Canadian Community Maps contributors., Sources: Esri, Vantor, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, and the GIS user community

SCHEDULE II TO BY-LAW 2026-XXX



DRAFT

NOT TO SCALE

DATE ISSUED:

THE UNDERSIGNED HAS REVIEWED AND TAKES RESPONSIBILITY FOR THIS DESIGN AND HAS THE QUALIFICATIONS AND MEETS THE REQUIREMENTS SET OUT IN THE ONTARIO BUILDING CODE TO DESIGN THE WORK SHOWN ON THE ATTACHED DOCUMENTS.

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FIRM NAME — BCIN

NO.	ISSUED	DATE	BY

NO.	REVISIONS	DATE	BY

PROJECT NORTH:

OWNER: MAC MCKENNA LOT, CON

MUNICIPALITY: MUSKOKA LAKES

PROJECT NAME: NEW DOCK

DRAWN BY: JOHN JARICK

SCALE: 1"=80'

DATE: JAN.20/2026

DATE OF ISSUE:

JJ DESIGN AND CONTRACTING
JOHN JARICK
ARCHITECTURAL TECHNOLOGIST
2676 MUSKOKA ROAD 169
TORRANCE, ONTARIO
POC 1MO
TEL: (705) 644-2072
EMAIL: jj_jarick@hotmail.com

DRAWING TITLE: SITE PLAN

PROJECT NO:

DRAWING NO: A1.01

1 Bailey Street
Port Carling, ON P0B 1J0
E: planning@muskokalakes.ca P: 705-765-3156 F: 705-765-6755

PLANNING COMMITTEE - NOTICE OF PUBLIC MEETING

THE CORPORATION OF THE TOWNSHIP OF MUSKOKA LAKES

Take notice that the Council for the Corporation of the Township of Muskoka Lakes will be considering an application for a proposed Amendment to Zoning By-law 2014-14 pursuant to Section 34 of the Planning Act, R.S.O., 1990, Chapter P. 13, as amended.

File No.: ZBA-19/26
Roll No.: 2-26-005
By-law No.: To Be Assigned

Owners:	Roger Denbeigh, Darryl Grenier, Lisa Juneau-Grenier
Address:	Vacant – No Civic Address Assigned
Description:	Part of Lot 42, Concession A, (Watt)
Zoning:	Rural (RU1), Rural – Residential – Scenic Corridor (RU1-S) & Environmental Protection (EP1) Lake: Not Applicable Schedule: 16
Meeting Date: Thursday, June, 11th, 2026 at 9:00 a.m.	

Take further notice that this public meeting will be held in a hybrid forum with electronic Zoom participation, and in-person format for those wishing to attend in-person. The meeting will be held in the **Council Chambers, Municipal Office, 1 Bailey Street, Port Carling, ON**. Should you wish to view an electronic copy of the Notice of Public Meeting for the above-noted application, please visit https://www.muskokalakes.ca/planning-notices/ or scan the QR code. Please note there may be a delay when the physical notice signs are posted and when the electronic copy of the Notice is available online.

Explanation of the Purpose and Effect:

A Zoning By-law Amendment Application has been submitted to permit an as-built hunt camp on the subject property.

Exemption	ZBL 2014-14 Section(s)	Description	Permitted	Proposal
A	6.1.1	Permitted Main Uses in Rural – Area 3 (RU1) Zone	Permitted Main Uses in RU1 Zone: – Agricultural Uses – Bed & Breakfast – Conservation – Residential – Dwelling Unit – Farm – Forestry Operation – Kennel – Open Space Recreation – Rooming Houses – Wayside Pit or Wayside Quarry	Permit an As-Built Hunt Camp as a Main Use

A key map of the subject property, the applicant's site plan and any drawing, and a draft By-law are included in this notice.

For more information, please contact the Planning Division weekdays between 8:15 a.m. and 4 p.m. at the Municipal Office, or at planning@muskokalakes.ca or by phone at (705) 765-3156. **Please quote the file number noted above.**

How to Participate:

Submit Comments in Writing



If you wish to provide a response to this application, please submit comments to planning@muskokalakes.ca, deliver in-person, or mail to P.O. Box 129, 1 Bailey Street, Port Carling, ON, P0B 1J0. For correspondence to be included on the agenda, please submit your comments by: **June 4, 2026.**

Please note that comments can still be submitted after the agenda has been published. Personal information collected in response to this Notice of Public Meeting will be used to assist staff and Council to process this application and will be made public.

Active Participation In-Person or on Zoom



Hybrid meetings are held at 9:00 a.m. on the above-noted meeting date in Council Chambers at the Municipal Office. For more information about participating, please visit www.muskokalakes.ca/speaking-at-a-meeting

Watch the Meeting Online



You can access the meeting from YouTube on the Township of Muskoka Lakes YouTube Channel. If the live webcast fails, the meeting recording will be posted under the Government Portal on www.muskokalakes.ca

FAILURE TO PARTICIPATE IN MEETING: If you do not participate in the meeting it may proceed in your absence and, except as otherwise provided in the Planning Act, you will not be entitled to any further notice in the proceedings.

REQUIREMENT FOR OWNERS OF MULTI-TENANT BUILDINGS: Upon receiving this Notice, owners of multi-tenant buildings with seven (7) or more residential units are asked to post this Notice in a location that is clearly visible to all tenants (i.e. building or community notice board), in accordance with O.Reg 545/06.

NOTICE OF PASSING & APPEALS: If you wish to be notified of the decision of the Council of the Township of Muskoka Lakes in respect to this application, you must make a written request to planning@muskokalakes.ca.

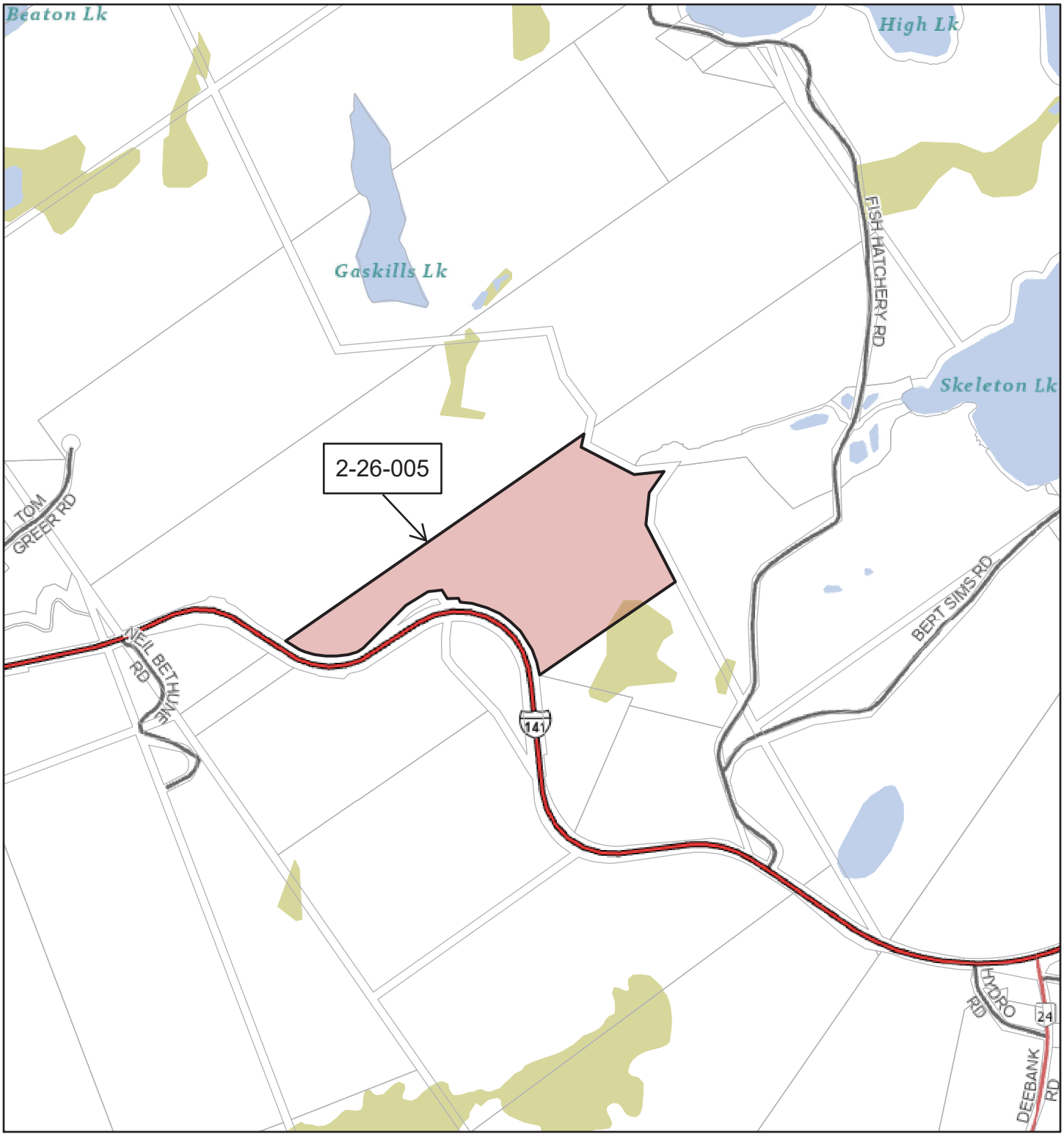
Furthermore, if a person or public body would otherwise have an ability to appeal the decision of the Council of the Township of Muskoka Lakes to the Ontario Land Tribunal but the person or public body does not make oral submissions at a public meeting or make written submissions to the Township of Muskoka Lakes before the by-law is passed, the person or public body is not entitled to appeal the decision. The person or public body may not be added as a party to the hearing of an appeal before the Ontario Land Tribunal unless, in the opinion of the Tribunal, there are reasonable grounds to do so.

Notwithstanding the above, subsection 34(19) of the Planning Act defines the parties that are eligible to appeal the decision to the Ontario Land Tribunal.

Dated at the Township of Muskoka Lakes this 20th day of May, 2026.

Crystal Best-Sararas, Clerk
Corporation of the Township of Muskoka Lakes

Key Map, ZBA-19/26 (Denbeigh, Grenier & Juneau-Grenier)Key Map



4/27/2026, 10:58:31 AM

NOT A PLAN OF SURVEY, FOR INFORMATIONAL PURPOSES ONLY.

1:19,083

Parcel: Assessment
District Municipality
Area Municipality
Geographic Township
Civic Addresses

Road Network
Provincial
District
Township
Wetland With Significance
Evaluated-Provincial

Evaluated-Other
Waterbody
Major Lake
Canada_Hillshade
World_Hillshade

0 0.1 0.2 0.4 mi
0 0.17 0.35 0.7 km

Sources: NRCan, Esri Canada, and Canadian Community Maps contributors., Esri, NASA, NGA, USGS, FEMA

Staff Report PLAN-2026-078
Planning Committee
June 11, 2026

TO: **Chair Bosomworth and Members of Planning Committee**

AUTHOR: **Kaitlyn Walker, Intermediate Planner**

SUBJECT: **ZBA-19/26 (DENBEIGH, GRENIER & JUNEAU-GRENIER), Part of Lot 42, Concession A, (Watt), Civic Address: No Civic Address Assigned, Roll #: 2-26-005**

RECOMMENDATION

THAT Zoning By-law Amendment Application ZBA-19/26 (DENBEIGH, GRENIER & JUNEAU-GRENIER), be APPROVED.

REPORT HIGHLIGHTS

This report provides an overview and analysis of Zoning By-law Amendment Application ZBA-19/26 (DENBEIGH, GRENIER & JUNEAU-GRENIER). Through policy analysis, a site visit, and desktop review of available information, staff have concluded that the application to permit an as-built hunt camp as a main permitted use is consistent with the Provincial Planning Statement and is in conformity with the Muskoka Official Plan, and the Township's 2023 Official Plan.

BACKGROUND

The purpose and effect of the proposed Zoning By-law Amendment Application ZBA-19/26 is to permit a hunt camp as a main permitted use on the subject property which will allow for an as-built hunt camp to remain. Technical details of the application are summarized in Table 1 below.

Table 1: Summary of Necessary Exemption

Exemption	ZBL 2014-14 Section(s)	Description	Permitted	Proposal
A	6.1.1	Permitted Main Uses in Rural – Area 3 (RU1) Zone	Permitted Main Uses in RU1 Zone: – Agricultural Uses – Bed & Breakfast – Conservation – Residential – Dwelling Unit	Permit an As-Built Hunt Camp as a Main Use

Exemption	ZBL 2014-14 Section(s)	Description	Permitted	Proposal
			– Farm – Forestry Operation – Kennel – Open Space Recreation – Rooming Houses – Wayside Pit or Wayside Quarry	

The site specific property detailed are outlined in Table 2 below.

Table 2: Site Specific Property Details

Matter	Comment
Official Plan Designation (November 2023 Consolidation)	Rural Area & Scenic Corridor
Zoning (ZBL 2014-14, as amended)	Rural Residential – Area 3 & Scenic Corridor (RU1 & RU1-S) & Environmental Potential (EP1)
Zoning Schedule	16
Lot Frontage	Information not available
Lot Area	± 58 acres
Access	Provincial – Year Round Maintained
Servicing	Outhouse / No Water
Abutting Zoning Categories	Rural Residential – Area 3 & Scenic Corridor (RU1 & RU1-S), Environmental Potential (EP1) & Waterfront Commercial (WC4B)
Original Shore Road Allowance	N/A
Lake/River Category	N/A
Site Plan Control	Not automatically subject to Site Plan Control.

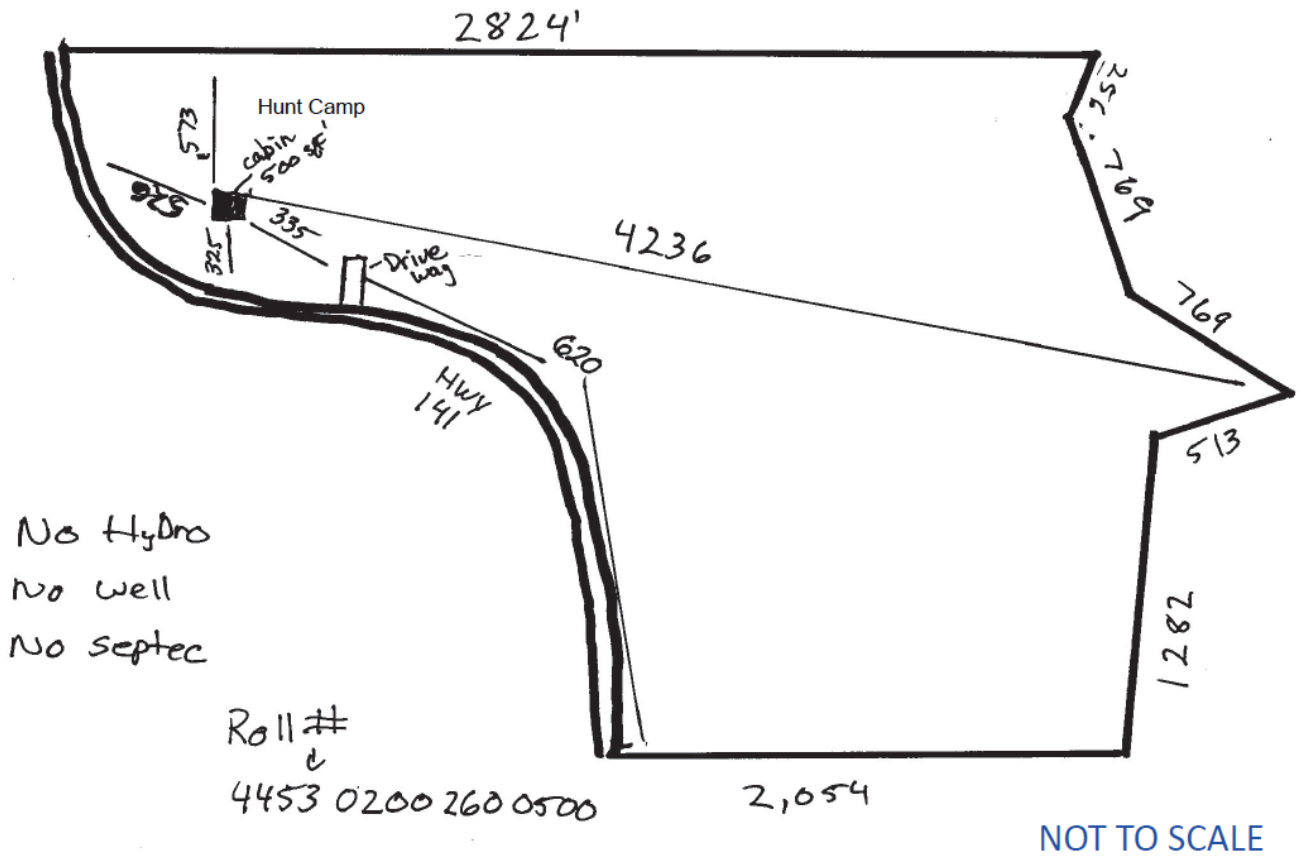


Figure 1: Zoning sketch.

ANALYSIS

Official Plans

No relevant policies were under appeal in the 2023 Official Plan and therefore the application has been reviewed based on the policies in the 2023 Official Plan.

Public Consultation

Notice of this public meeting to be held under the Planning Act for this application was circulated 22 days in advance of this scheduled June, 11, 2026 meeting date and 5 written departmental comments have been received at the time of writing (see Table A3 below). None of the comments received at the time of writing had concerns with the proposed development. Any written comments received up to June, 4, 2026 will be attached to Committee's Agenda under Section 16.

History

In November of 2025 an Order to Comply was issued by the Township's Development Services Department on the subject property for the construction of the subject building without the benefit of a building permit. The order requires that a building permit be obtained or the structure be

removed. As the as-built hunt camp does not comply with the Township's Zoning By-law, a building permit cannot be issued at this time. This is why the applicant is making the current rezoning application to permit a hunt camp as a main use on the subject property.

Proposed Exemptions A – Permit a Hunt Camp as a Main Use

Planning staff have no concerns with the approval of the requested exemption. In making this determination, key considerations include the following:

- The subject property is within the Rural Area and Scenic Corridor designations of the Township's Official Plan. Rual Area Policy H2.1.1 outlines the uses that are permitted within the Rural Area designation which includes hunt camps. Per Policy L2 d) Scenic Corridors are scenic roadways routes through the Township along which development shall be situated and setback to minimize visual impact.

- The subject property is zoned Rural Residential – Area 3/Scenic Corridor (RU1 & RU1-S) and Environmental Protection (EP1). The RU1 zone permits a range of main uses, including a dwelling unit, which are listed in Table 1. A hunt camp is not a permitted main or accessory use within the RU1 zone.

- The applicants have applied to permit an as-built hunt camp as a main use on the subject property. It is the understanding of staff that the applicants wish for the as-built structure to be permitted as a hunt camp as this is their intended use for the lot. Staff understand that the as-built hunt camp is serviced by an outhouse and generator. The applicants do not intend to have the hunt camp serviced by well water, hydro or a septic system.

- From a policy perspective staff have no concerns with the proposal to permit a hunt camp as a main use. A hunt camp is a use that is permitted in the Rual Area designation by the Township's 2023 Official Plan. Further, the hunt camp is well setback from Highway 141 and is not visible from the road.

- Hunt camps are a permitted use in the Open Space, OS1- public open space and OS2 – private open space zones. Typically, lots within the Open Space zones do not have frontage on public year-round maintained roads which is why the only permitted habitable use is a hunt camp. Alternatively, Rural (RU1) lots are normally located on public year-round maintained roads which is why they are permitted to have dwelling units. Staff do not have concerns with a less intensive habitable use (i.e. a hunt camp) being permitted on a RU1 property with year-round access.

- The as-built hunt camp will meet all the Open Space Zones requirements for a hunt camp. In the Open Space Zones, hunt camps are limited to 15 feet in height and a maximum of 1000 square feet in area. The as-built hunt camp is 13.1 feet in height and 500 square feet in area. Further, the Township's Zoning By-law defines a hunt camp as follows: Shall mean a building occupied not more than 14 days in any month and not more than 60 days in any twelve month period. It is to be used solely for the purposes of accommodating hunters. A hunt camp shall not be used as a dwelling unit. The applicants have advised they are aware

of the restrictions and intend on using the hunt camp as defined.

- Staff have considered that, if approved as proposed, the property could be developed with the as-built hunt camp as well as a dwelling unit and a secondary dwelling unit in the future. This would have the effect of permitting three habitable buildings on the subject lot. Policy L7.3 a) of the Township's Official Plan states that, in any land use designation where residential uses are permitted (expect the Waterfront Area designation), up to two additional dwelling units may be permitted on a lot that is the site of a single detached, semi-detached or townhouse unit. This policy means that rural residential lots could be developed, where appropriate, with a main dwelling unit and two secondary dwelling units. In the opinion of staff, the permission for a dwelling unit, hunt camp and secondary dwelling unit conforms with policy L7.3 a). The intensity of use of a hunt camp is less than that of a secondary dwelling unit. The property is large with approximately 48 acres of area and has considerable frontage on Highway 141 based on Geohub mapping. Staff do not have concerns that the subject property would be able to accommodate a dwelling unit and secondary dwelling unit in the future in addition to the as-built hunt camp.

- Staff have considered that hunting is a permitted activity on the subject property regardless of whether a hunt camp is permitted or not. Therefore, no conflict of use is being created by permitting the as-built hunt camp.

General Analysis

Site visit photos, property constraints and past planning approvals, and policy considerations are included in an appendix to this report.

PREPARATION

Original signed by K. Walker
Prepared By
Kaitlyn Walker
Intermediate Planner
Planning Division
(705) 765-3156 ext. 236
KWalker@muskokalakes.ca

Original signed by S. Stone
Approved By
Steve Stone
Manager of Planning
(705) 765-3156 ext. 235
SStone@muskokalakes.ca

Original Signed by D. Pink
CAO Acknowledged
David Pink
Chief Administrative Officer
(705) 765-3156 ext. 230
DPink@muskokalakes.ca

APPENDIX

A1: Property Constraints

Matter	Comment
Species at Risk (SAR)	SAR may be encountered in the area. More information regarding SAR can be found at www.ontario.ca/SpeciesAtRisk. Property owners should consult the Ministry of the Environment Conservation, and Parks (MECP) to ensure any proposed development will not have any adverse impacts on SAR or SAR habitat. Given the applicant's statutory obligations under the *Endangered Species Act, 2007*, an evaluation of potential habitat of endangered and threatened species and impacts has not been completed, however, one can be requested by Committee if desired.
Deer Wintering Habitat	A review of available mapping indicates that the subject property is within a Stratum 2 Deer Wintering Area. Stratum 1 habitat is described as the core habitat where deer concentrate in mid-winter once snow depth generally exceeds 50cm and deer movement is restricted. Stratum 2 habitat generally surrounds Stratum 1 habitat. The footprint of the as-built hunt camp is small and no further tree removal is required. Given this consideration, staff have not requested an evaluation of the impacts to deer wintering habitat, although Committee can request one if desired.

A2: Site Visit Photos, April 29, 2026



Figure 1: As-Built Hunt Camp



Figure 2: Existing driveway

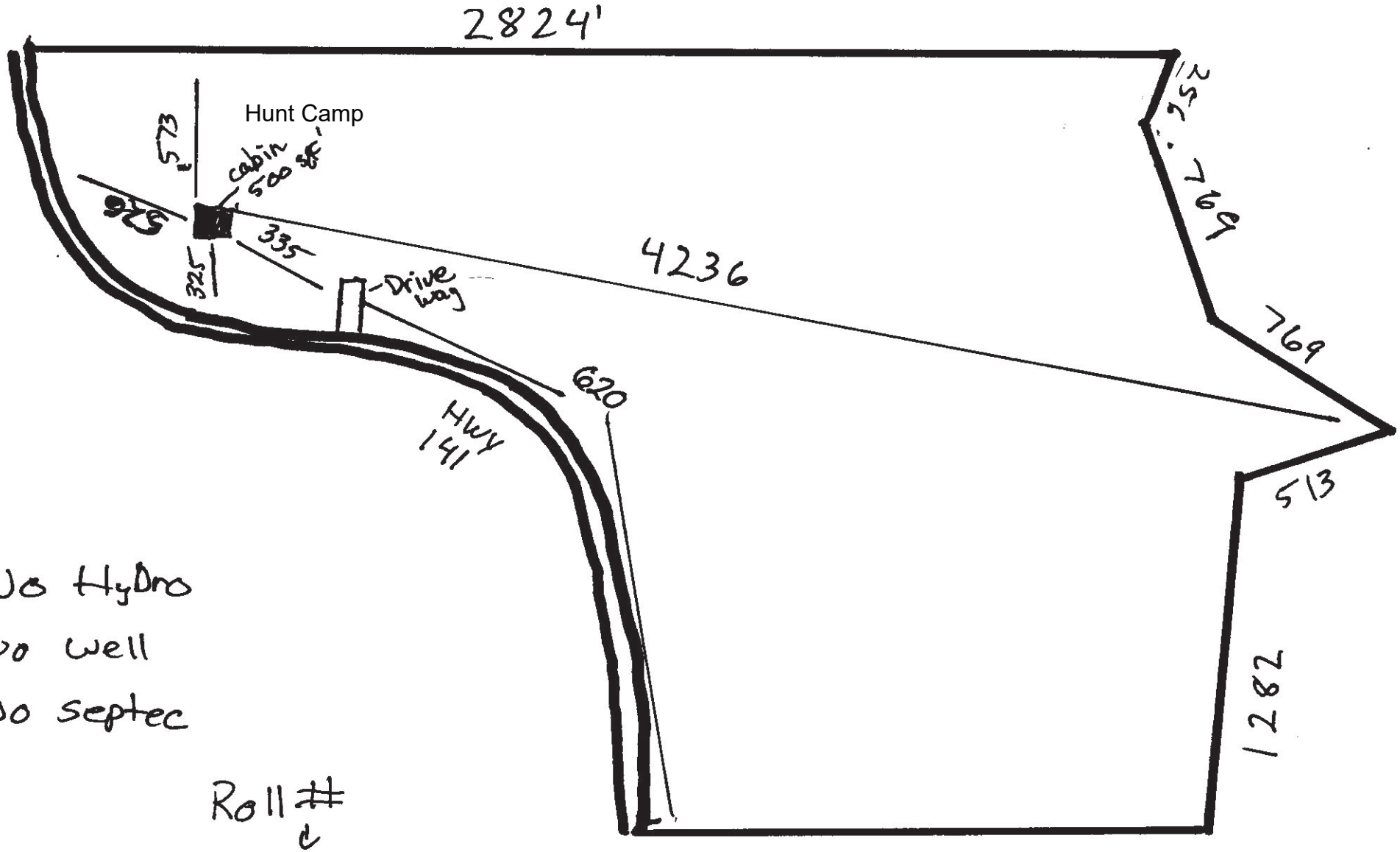
A3: Agency and Public Comments Submitted at Report Writing

Agency	No Objection	Objection	Comments
District Municipality of Muskoka	✓		Not opposed to the approval of the application provided that development be directed outside of the identified Stratum II Deer wintering habitat and/or that appropriate development techniques are used to conserve conifer thermal cover, deer feeding areas and movement corridors.
Township of Muskoka Lakes, Development Services Division	✓		No objection. A building permit is required for the construction of the hunt camp and any sewage system installed to service any plumbing included.
Township of Muskoka Lakes, Operational Services	✓		No concerns from an Operational Services perspective.
Township of Muskoka Lakes, Emergency Services	✓		Hunt camp must conform to the requirements for smoke alarms and carbon monoxide detectors. Allow for fire department apparatus access.
Trillium Lakelands District School Board	✓		Request to be notified of the final decision.
Public			
			No comments received at the time of writing.

A4: Planning Policy

Provincial Policy Statement
The Provincial Planning Statement, 2024 (PPS) provides policy direction on matters of provincial interest related to land use planning and development. The subject lands are identified as Rural Lands in the PPS and the application is consistent with applicable policies.
District of Muskoka Official Plan
The subject lands are designated Rural Area in the District of Muskoka Official Plan. The District Municipality of Muskoka is a commenting agency in regard to Provincial and District interests. Comments from the District indicate no objection to the application.
Township of Muskoka Lakes 2023 Official Plan (Adopted October 12, 2022, Approved November 20, 2023)
The Township's 2023 Official Plan designates the subject lands as Rural Area and the application conforms with the applicable policies of this Plan.

ZONING SKETCH



No Hydro

No well

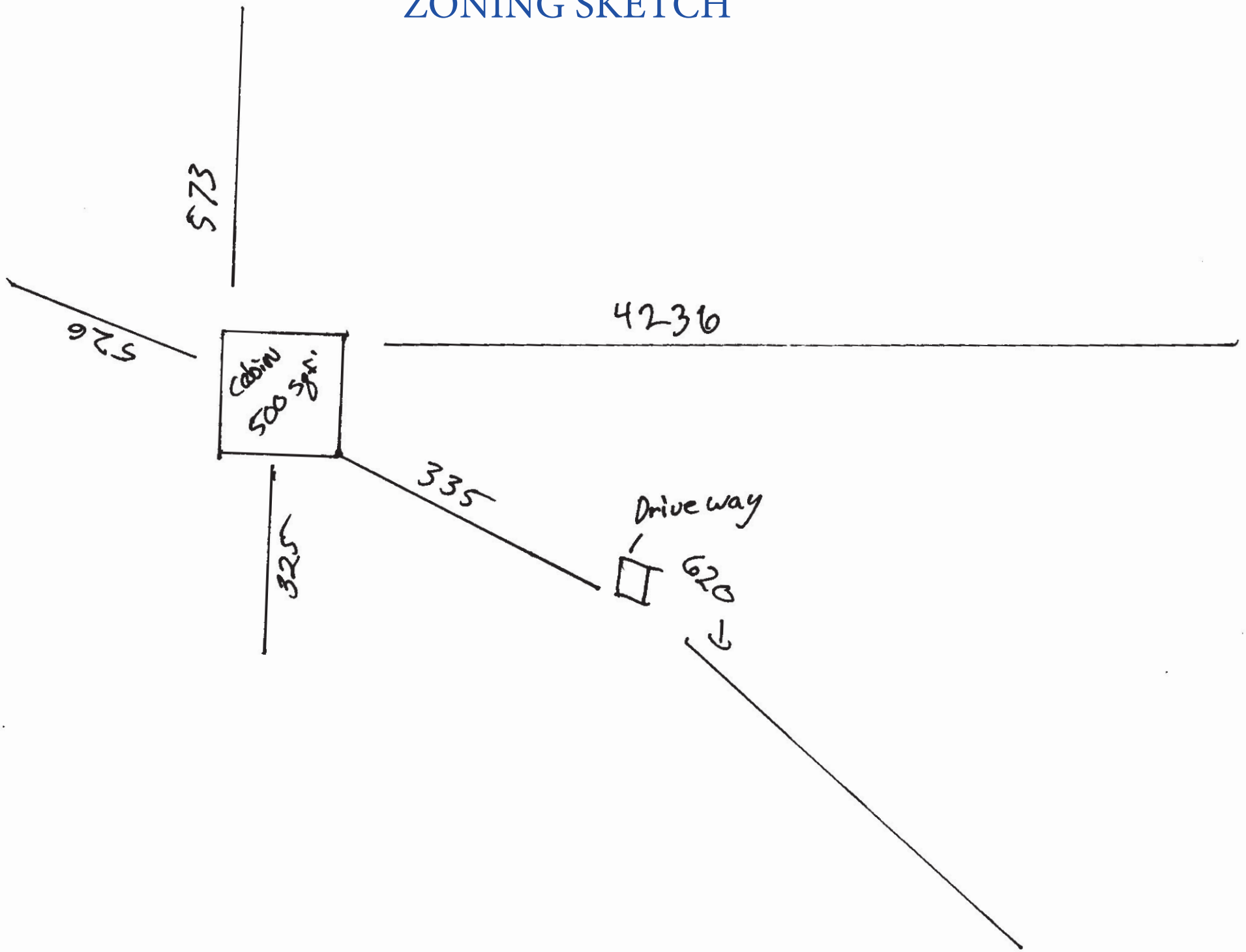
No septec

Roll #

4453 0200 260 0500

NOT TO SCALE

ZONING SKETCH



NOT TO SCALE

THE CORPORATION OF THE TOWNSHIP OF MUSKOKA LAKES

BY-LAW NUMBER 2026-XXX

Being a by-law to amend Comprehensive Zoning By-law 2014-24, as amended, in the Township of Muskoka Lakes

WHEREAS the authority to pass this by-law is provided by Section 34 of the Planning Act, R.S.O. 1990, Chapter P.13 and amendments thereto;

AND WHEREAS By-law 2014-14 was enacted by the Corporation of the Township of Muskoka Lakes to regulate land use within the Municipality;

AND WHEREAS the Council of the Corporation of the Township of Muskoka Lakes deems it advisable to further amend By-law 2014-14;

NOW THEREFORE THE COUNCIL OF THE CORPORATION OF THE TOWNSHIP OF MUSKOKA LAKES ENACTS AS FOLLOWS:

1. Section 12 of By-law 2014-14 is hereby further amended by the addition of the following subsection:

   87-XXXX i) The lands affected by this amendment are described as Part of Lot 42, Concession A, (in the former Township of Watt), now in the Township of Muskoka Lakes, as shown hatched on Schedule I to By-law 2026-XXX.

   ii) Despite the provisions of Section 6.1.1 of Zoning By-law 2014-14, as amended, for those lands described above, a Hunt Camp shall be a permitted main use as shown in the location and extent on Schedule II to By-law 2026-XXX.

2. Schedules I and II attached hereto are hereby made part of this By-law.

3. All other provisions of By-law 2014-14 apply. To the extent of any conflict between By-law 2026-XXX and By-law 2014-14, as amended, the provisions of By-law 2026-XXX shall apply.

4. That this by-law shall come into force and take effect _____, 2026.

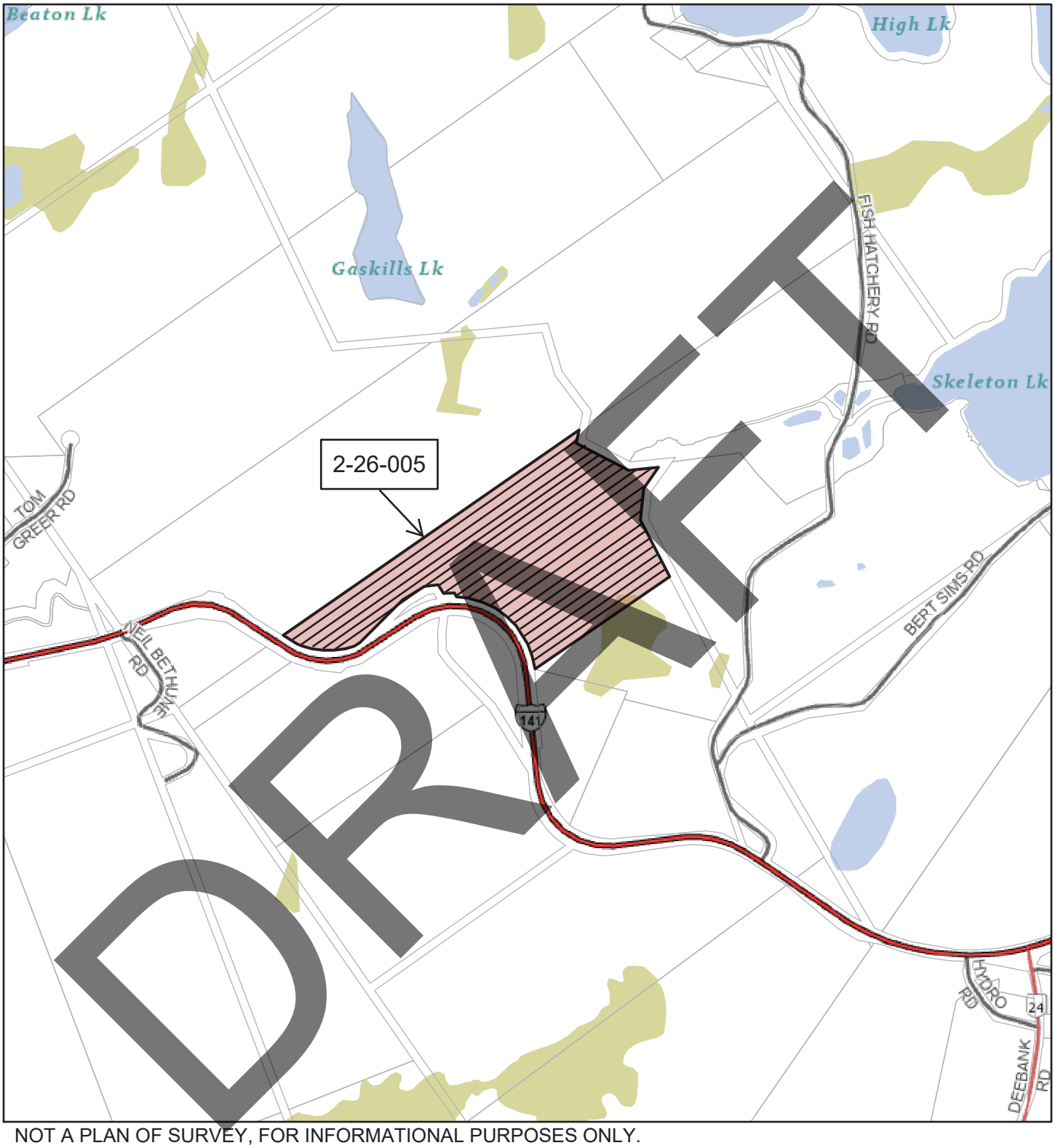
Read a **first, second** and **third time** and **finally passed** this **__th day of _____, 2026.**

_____
Mayor Peter Kelley

_____
Crystal Best-Sararas, Clerk

DRAFT

SCHEDULE I TO BY-LAW 2026-XXX



NOT A PLAN OF SURVEY, FOR INFORMATIONAL PURPOSES ONLY.

1:19,083

0 0.1 0.2 0.4 mi

0 0.17 0.35 0.7 km

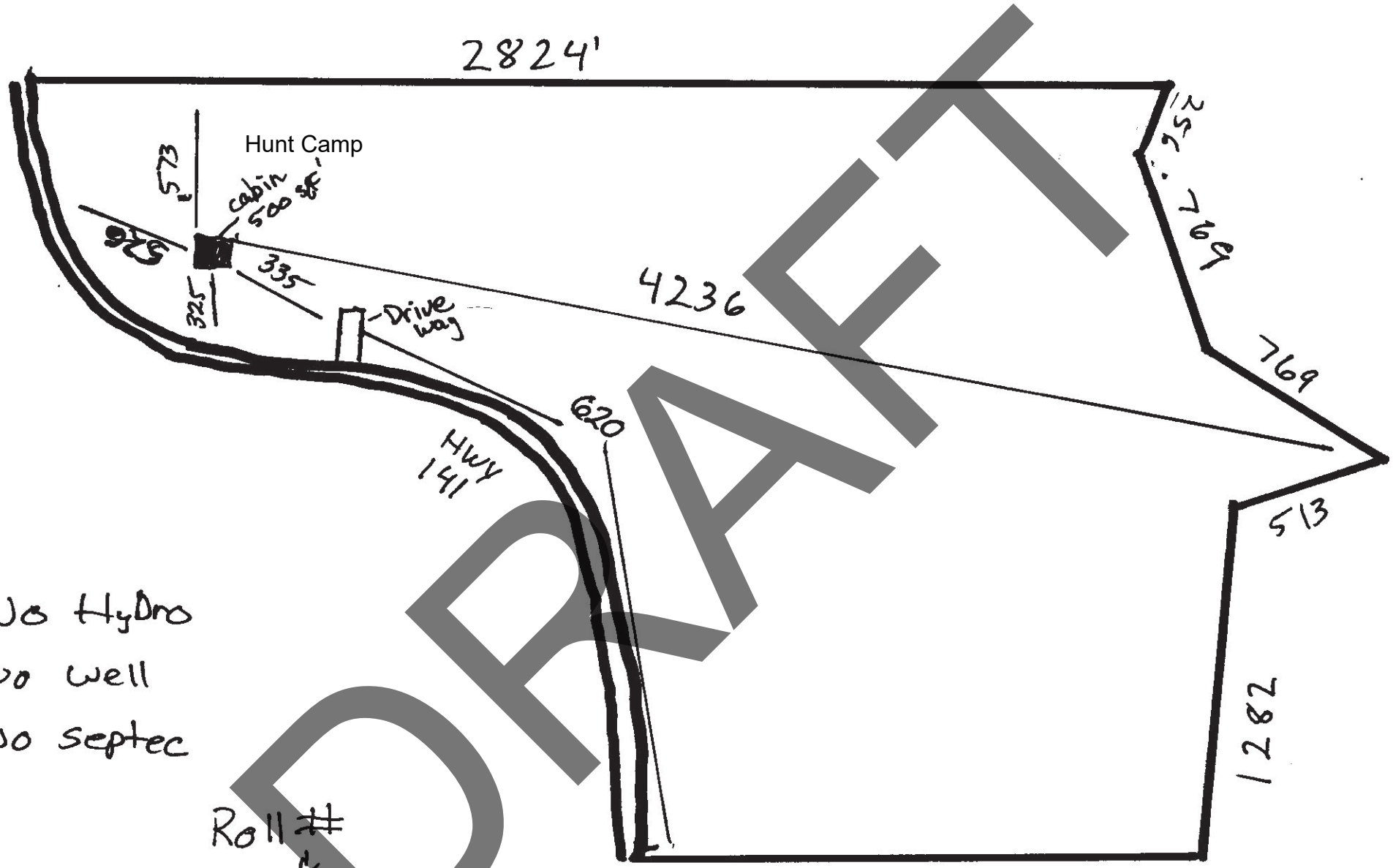
Parcel: Assessment
District Municipality
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Geographic Township
Civic Addresses

Road Network
Provincial
District
Township
Wetland With Significance
Evaluated-Provincial

Evaluated-Other
Waterbody
Major Lake
Canada_Hillshade
World_Hillshade

Sources: NRCan, Esri Canada, and Canadian Community Maps contributors., Esri, NASA, NGA, USGS, FEMA

SCHEDULE II TO BY-LAW 2026-XXX



DRAFT

NOT TO SCALE

Staff Report DSES-2026-022
Planning Committee
June 11, 2026

TO: **Chair Bosomworth and Members of Planning Committee**

AUTHOR: **Rachel Miners, Chief Municipal Law Enforcement Officer**

SUBJECT: **Bill 119, AMPS for Zoning By-law**

RECOMMENDATION

BE IT RESOLVED THAT Staff Report DSES-2026-022 be submitted as the Township's formal comments to Environmental Registry of Ontario Posting 026-0558, Bill 119, the Proposed Protecting Ontario's Streets and Communities Act, 2026.

REPORT HIGHLIGHTS

This report provides an overview of Schedule 7 of Bill 119, the Proposed Protecting Ontario's Streets and Communities Act, 2026 which proposes changes to the Planning Act.

BACKGROUND

On May 25, 2026, the Ontario government introduced Bill 119, the Proposed Protecting Ontario's Streets and Communities Act, 2026. The Township was notified of the draft bill on June 1, 2026 (Appendix "I"). Schedule 7 of Bill 119 proposes changes to the Planning Act which, if passed, would enable municipalities to use an administrative monetary penalty system (AMPS) for zoning by-law contraventions that relate to land uses that are not permitted. More details on the proposed changes is outlined in Appendix "II". The proposed Bill will remain open for comments until June 25, 2026.

Currently, the Planning Act does not provide municipalities authority to use AMPS for zoning by-law contraventions. Enforcement of the Township's Zoning By-law is currently through Part 3 of the Provincial Offences Act (charges by way of information and summons to Provincial court).

ANALYSIS

Staff are generally supportive of the proposed changes to the Planning Act which would enable the Township to create administrative monetary penalties for Township Zoning By-law provisions that relate to land uses. Staff support these proposed amendments as they would provide municipalities with a more efficient and effective enforcement mechanism to address zoning violations and improve compliance with municipal land use regulations as outlined in more detail below.

Under the current legislative framework, enforcement of zoning by-law contraventions generally requires prosecution through the Provincial Offences Court. This process can be resource-intensive, costly, and time-consuming for municipalities, often resulting in lengthy delays between the identification of a violation and its resolution.

The proposed amendments would allow municipalities to issue administrative penalties for specified zoning infractions without requiring court proceedings. This system is already used successfully by the Township for other municipal by-law matters including noise, tree conservation and site alteration. AMPS provides a streamlined adjudication process that is generally faster, less costly, and more accessible than traditional court-based enforcement while maintaining procedural fairness through internal review and appeal mechanisms. Further, it allows for fines to be set and collected by the municipality and when necessary unpaid fines added to tax rolls as opposed to uncollected through the courts. Lastly, more timely enforcement is expected to improve overall compliance rates and deter ongoing violations by providing a meaningful and immediate enforcement response.

Staff also note that the proposed authority would provide greater flexibility to select enforcement mechanisms that are proportionate to the nature of the contravention and responsive to local circumstances. Municipal staff would continue to retain discretion regarding whether to impose AMPS or Part 3 charges.

While the proposed amendments provide municipalities the ability to issue AMPS for zoning infractions, it is limited to zoning infractions that relate to land uses. As such, staff would be supportive of the Province expanding AMPS to all zoning infractions such as buildings or structures that have been erected, located, or are being used not in compliance with the Zoning By-law.

ALTERNATIVES

Committee may wish not to submit comments to the Province on proposed Bill 119 or submit alternative comments. The latter would require direction from Committee as to any specific changes.

FINANCIAL IMPLICATIONS

There are no direct financial implications to the Township at this time. However, if the Bill is passed, staff will be required to update the Township's AMPS By-law. Additionally, there may be variations within the By-law Division budget as AMPS may involve lower legal costs compared to Part 3 charges.

STRATEGIC PLAN

Enhance our Natural Environment
Strengthen our Cultural & Community Fabric
Deliver Sustainable Public Services & Infrastructure

COMMUNICATIONS

This staff report was distributed to Planning Committee and all those registered to receive notification through the meeting agenda electronic notification system and was published on the Township's website in accordance with the Township's Procedural By-law.

ATTACHMENTS

Appendix I – Bill 119 Notification Letter
Appendix II – Bill 119 (Sarah Hahn, Barriston Law)

PREPARED BY

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Office of the Minister

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Ontario

234-2026-1746

June 1, 2026

On May 25, 2026, our government introduced the proposed *Protecting Ontario's Streets and Communities Act, 2026* (Bill 119). Through this legislation, we are proposing new tools to address zoning by-law contraventions which respond to recommendations and requests from municipal leaders. The proposed *Planning Act* changes, if passed, would enable municipalities to use an administrative monetary penalty (AMP) system for zoning by-law contraventions which relate to land uses that are not permitted.

We are interested in receiving your comments on these proposed changes. Comments can be made through the Environmental Registry of Ontario Posting 026-0558 Proposed Planning Act Changes (Schedule 7 of Bill 119 - *Protecting Ontario's Streets and Communities Act, 2026*) from May 26, 2026, to June 25, 2026. The government invites you to review the Environmental Registry of Ontario and Regulatory Registry of Ontario links provided above and share any feedback you may have.

If you have any questions, please reach out to my Director of Stakeholder Relations, Caucus Affairs and Public Appointments, Tanner Zelenko at tanner.zelenko@ontario.ca.

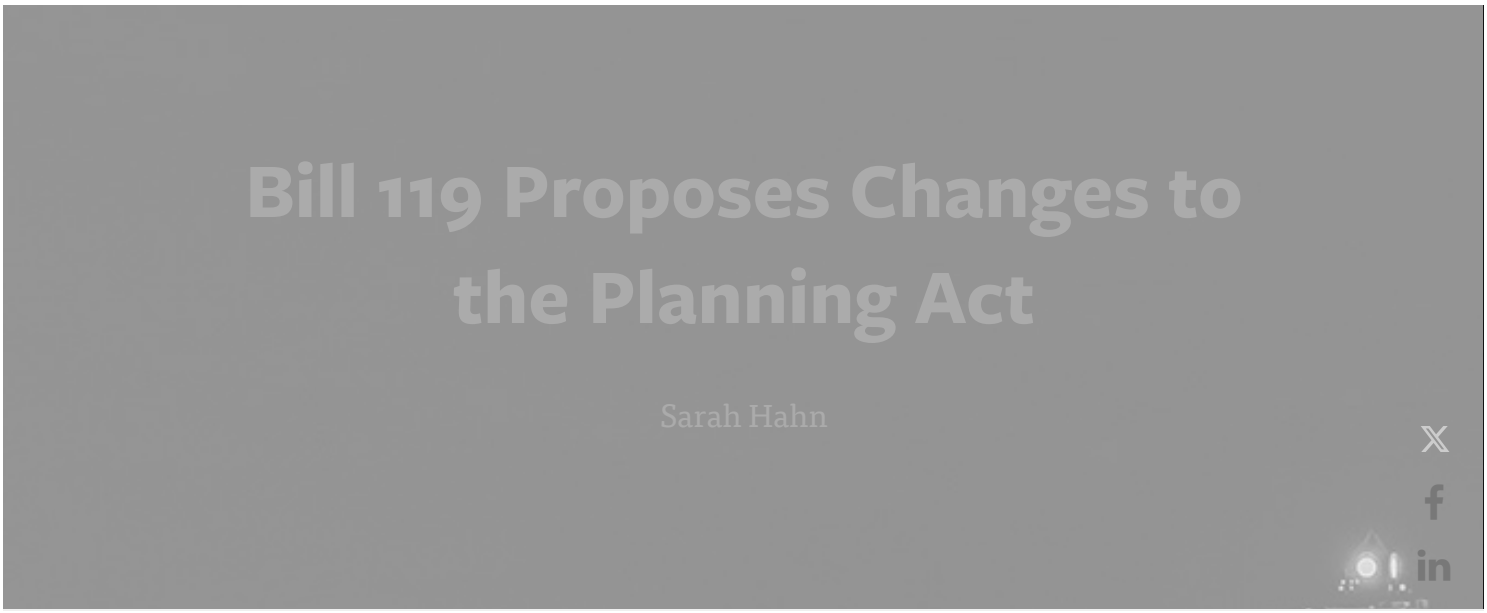
I look forward to continued collaboration with you to address these and other important issues facing our communities.

Sincerely,



Hon. Robert J. Flack
Minister of Municipal Affairs and Housing

c. The Honourable Graydon Smith, Associate Minister of Municipal Affairs and Housing
Robert Dodd, Chief of Staff Minister's Office
Matthew Rae, Parliamentary Assistant, Municipal Affairs and Housing
Laura Smith, Parliamentary Assistant, Municipal Affairs and Housing
Brian Saunderson, Parliamentary Assistant, Municipal Affairs and Housing
Martha Greenberg, Deputy Minister, Municipal Affairs and Housing
David McLean, Assistant Deputy Minister, Municipal Affairs and Housing
Laurie Miller, Assistant Deputy Minister, Municipal Affairs and Housing
Sean Fraser, Assistant Deputy Minister, Municipal Affairs and Housing
Municipal Chief Administrative Officers



Last week, we wrote about the announcement of proposed changes to the *Planning Act* to allow zoning infractions to be enforced through a municipal Administrative Monetary Penalty System ("AMPS").

See: **Province Proposing AMPS Penalties for Zoning Infractions**

This amendment has now been set out in Schedule 7 of Bill 119, the proposed *Protecting Ontario's Streets and Communities Act, 2026*. It is being debated at Second Reading today (May 28, 2026) and has been posted on the Environmental Registry of Ontario for a 30-day commenting period, ending June 25, 2026.

The key addition to the *Planning Act* is proposed to read:

> **67.2** (1) A local municipality may require a person, subject to such conditions as the local municipality considers appropriate, to pay an administrative penalty if the local municipality is satisfied that the person has failed

> to comply with any provisions of a by-law of the local municipality respecting the matter described in paragraph 1 of subsection 34 (1).

It refers to the first paragraph of section 34(1) which authorizes a zoning by-law to prohibit the use of land except for the purposes set out in the by-law:

> **Zoning by-laws**
>
> **34** (1) Zoning by-laws may be passed by the councils of local municipalities:
>
> **Restricting use of land**
>
> 1. For prohibiting the use of land, for or except for such purposes as may be set out in the by-law within the municipality or within any defined area or areas or abutting on any defined highway or part of a highway.

This will be an important tool for municipalities who will be able to ensure compliance with the permitted uses in their zoning by-law by individuals who continue illegal uses and refuse to stop. The current options of charging a property owner under the *Provincial Offences Act* or bringing a court application under section 440 of the *Municipal Act, 2001* can be undesirable options because of the time and expense of pursuing these avenues.

Sarah Hahn

May 28, 2026

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Staff Report DSES-2026-023
Planning Committee
June 11, 2026

TO: **Chair Bosomworth and Members of Planning Committee**

AUTHOR: **Rachel Miners, Chief Municipal Law Enforcement Officer**

SUBJECT: **Noise By-law**

RECOMMENDATION

BE IT RESOLVED THAT Planning Committee approve the Final Draft Noise By-law, attached as Appendix I to Staff Report DSES-2026-023;

AND THAT the final by-law be forwarded to Council for final adoption;

AND THAT staff be directed to return to Planning Committee with an update to the Administrative Monetary Penalty System By-law.

REPORT HIGHLIGHTS

This report provides an overview of the Final Draft Noise By-law which has been attached to this report as **Appendix I.** A comparison of Noise Control By-law 2005-083 and the Final Draft Noise By-law has been completed in the Summary of Changes to Noise Regulations, which has been attached to this report as **Appendix II.**

BACKGROUND

In October 2025, Planning Committee endorsed a plan for the update of the Noise Control By-law. In March 2026, Planning Committee received the Draft Noise By-law for the first time. Committee directed amendments to the Draft Noise By-law and directed staff to circulate and present the amended Draft Noise By-law at a public meeting for further community feedback which occurred in May 2026.

The purpose of this report is to provide a summary of public feedback received and present the Final Draft Noise By-law for Committee's consideration.

ANALYSIS

Drafting of the Noise By-law

Throughout the project of the Noise By-law update, staff carefully considered community characteristics, strategic plan goals, and public feedback to ensure the Noise By-law achieves the objectives of improving the peaceful environment for residents and visitors alike, ensuring a healthy community, and supporting the commercial activities that sustain the recreation, tourism, and development sectors.

Staff completed a full Summary of Changes to Noise Regulations which can be found in **Appendix II.** This summary compares the current Noise Control By-law to the Final Draft Noise

By-law, and shows all changes made. During the project, certain topics were of specific interest to the public, including daytime/nuisance noise, animal noise, construction noise, human noise associated with outdoor residential sport courts/recreational surfaces, and tourist entertainment operations. Staff considered all public feedback received and made updates to the drafted Noise By-law. Each of these topics are reviewed in Table 1 below.

Table 1: Review of Public Feedback & Recommendations

Noise Topic & Regulation	**Public Feedback Received**	**Recommendations**
Prohibition of noise from the operation of snow making machines and snow trail groomers between 9:00 pm and 7:00 am; excluding those operated on official trails. Section 5.2.3	Opposition of this exclusion due to potential impacts this may have on recreational activities such as snowmobiling.	Removal of regulation, Section 5.2.3. New exemption Section 3.1.8 for vehicles or equipment being operated in connection with the creation or maintenance of official trails.
Prohibition of noise from the operation of vehicles for leisurely or recreational activities between 9:00 pm and 7:00 am next day. Section 5.2.4	Opposition of this exclusion due to potential impacts this may have on recreational activities such as snowmobiling.	Removal of regulation, Section 5.2.4. Section 4.1 proposes prohibitions for nuisance noises at any time of the day.
Previous amendment to permit construction noise to start at 7:00 am on weekdays from 6:00 am on weekdays. Section 5.3	Opposition of this change due to potential impacts to local businesses, development, and the overall economy.	Permit construction noise at 6:00 am on weekdays to ensure a balance between supporting the economy and maintaining a peaceful environment. Construction related noise has been limited to 8:00 pm from the previous 11:00 pm.

Noise Topic & Regulation	**Public Feedback Received**	**Recommendations**
Regulations for Tourist Entertainment Operations in Schedule A. Section 5.7	Request to extend weekday hours to 1:00 am or otherwise extend all hours to Provincial legislation for serving alcohol until 2:00 am.	Maintain regulations set out in Section 5.7. The Noise By-law does not regulate the operating hours of Tourist Entertainment Operations, rather it regulates noise from humans and sound systems that can be heard at a point of reception. It is staff's understanding that the AGCO does not regulate indoor music at licensed establishments, only outdoor music. Further, the AGCO regulates licensed establishments hours to serve alcohol.
Regulations for Tourist Entertainment Operations in Schedule A. Section 5.7	Request to add the Bala Bay Inn to Schedule A.	Maintain Schedule A, and do not include additional properties. The intended purpose of creating unique noise hours for the property identified in Schedule A (Kee to Bala) was to recognize its unique property use and the historical recreation it provides. Section 6.1 proposes a noise exemption permit process for those requesting to conduct noise activities that exceed the regulations.

Noise Topic & Regulation	**Public Feedback Received**	**Recommendations**
Exclusion of animals that are subject to a Zoo and Wildlife Sanctuary license.	Opposition of this exclusion due to potential impacts this type of noise may have on adjacent properties.	Maintain exclusion of animals that are subject to a Zoos and Wildlife Sanctuary license. The Zoos and Wildlife Sanctuary By-law provides prohibitions for nuisances which can be enforced through revocation of license and issuance of penalties and charges. If Committee wishes, they can choose to re-prioritize the update of animal control by-laws sooner to respond to feedback.
Exclusion of specific regulations for human noise associated with outdoor residential sport courts/ recreational surfaces.	Opposition of this exclusion due to potential impacts this type of noise may have on adjacent properties.	Maintain exclusion of specific regulations for this type of noise. Section 4.1 proposes prohibitions for nuisance noises at any time of the day. Section 5.1 proposes prohibitions for human noises and sound systems between 11:00 pm and 7:00 am.

Next Steps

The Final Draft Noise By-law is currently undergoing a legal review to ensure regulations are enforceable. Any changes recommended by Committee will also be forwarded. If the legal review requires changes to be made to the Final Draft Noise By-law, staff intend to summarize these refinements in a report to Council when the by-law is being considered.

If Committee recommends approval of the Final Draft Noise By-law to Council and Council approves the by-law staff can begin the final stage of the project, the implementation and educational phase. To fully implement the updated Noise By-law, staff will be required to update the AMPS By-law which involves bringing a report and updated by-law to Planning Committee for consideration. Additionally, staff will make an application to the Ministry of Attorney General for approval of short form wording and set fines for Provincial Offences Part 1 Offence Notices, which can take approximately four to six weeks for approval. Once implementation is complete, staff can begin the educational phase which includes public awareness and creating new educational materials. Staff will eventually proceed with normal enforcement approaches of the by-law such as the issuance of AMPS and charges.

ALTERNATIVES

Should Committee wish to make amendments to the Final Draft Noise By-law, specific direction will need to be received.

FINANCIAL IMPLICATIONS

There are no direct financial implications to the Township as a result of this report. However, with the proposed regulation for nuisance noises, staff can expect to experience an increase in noise complaints received, and responses required by staff. Consideration should be given to the impacts on current levels of service and the need for any additional resources that may result. Staff will report back as necessary.

STRATEGIC PLAN

Goal: Enhance our Natural Environment
Goal: Strengthen our Cultural & Community Fabric
Goal: Deliver Sustainable Public Services & Infrastructure

COMMUNICATIONS

This staff report was distributed to Committee and all those registered to receive notification through the meeting agenda electronic notification system and was published on the Township's website in accordance with the Township's Procedural By-law.

ATTACHMENTS

Appendix I – Noise By-law
Appendix II – Summary of Changes to Noise Regulations

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THE CORPORATION OF THE TOWNSHIP OF MUSKOKA LAKES

BY-LAW NUMBER 2026-XXX

Being a by-law to regulate noise in the Township of Muskoka Lakes

AND WHEREAS Section 9 of the Municipal Act provides that a municipality has the capacity, rights, powers and privileges of a natural person for the purpose of exercising its authority under the Municipal Act or any other Act;

AND WHEREAS Section 129 of the Municipal Act provides that a municipality may prohibit and regulate with respect to noise;

AND WHEREAS Section 425 of the Municipal Act provides that a municipality may pass by-laws providing that a person who contravenes a by-law of the municipality passed under the Municipal Act is guilty of an offence;

AND WHEREAS Section 429 of the Municipal Act provides that a municipality may establish a system of fines for offences under a by-law of the municipality passed under the Municipal Act;

AND WHEREAS Section 434.1 (1) of the Municipal Act provides that a municipality may require a person to pay an administrative penalty if the municipality is satisfied that the person has failed to comply with a by-law of the municipality passed under the Municipal Act;

AND WHEREAS noise is recognized as a form of pollution under the Environmental Protection Act, R.S.O. 1990;

AND WHEREAS noise pollution has a negative impact on the quality of life for the Township of Muskoka Lakes residents;

AND WHEREAS the Council of the Township of Muskoka Lakes desires to preserve the peace and quiet of the residents of the Township of Muskoka Lakes through the reduction, control and prevention of loud and excessive noise;

NOW THEREFORE THE COUNCIL OF THE CORPORATION OF THE TOWNSHIP OF MUSKOKA LAKES ENACTS AS FOLLOWS:

1.0 SHORT TITLE

1.1 This By-law shall be known as the "**Noise By-law**".

2.0 DEFINITIONS

For the purposes of this By-law, the following definitions shall apply:

2.1 **Appeals Committee** shall mean the Appeals Committee established pursuant to the Township's Appeals Committee By-law as may be amended, established for the purposes of considering and deciding upon appeals.

2.2 **Construction** shall mean any activity which includes erection, alteration, repair, dismantling, demolition, waste removal, structural maintenance, painting, moving, landscaping, land clearing, earth moving, grading, excavating, blasting, rock crushing, forestry operation, logging, equipment delivery, material delivery, the laying of pipe and conduit whether above or below ground level, street and highway building, concreting equipment installation and alteration and the structural installation of construction components and materials in any form or for any purpose, and includes any work in connection therewith.

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2.3 **Council** shall mean the Council for the Corporation of the Township of Muskoka Lakes.

2.4 **Equipment** shall mean any equipment, tool, or device designed or intended for any use and includes but is not limited to wood splitters, chainsaws, sawmills, power tools, compressors, pile drivers, pneumatic or hydraulic tools, bulldozers, tractors, scrapers, pavers, off-highway haul trucks, ditchers, compactors, rollers, pumps, concrete mixers, graders, snow making machine, or other material handling equipment.

2.5 **Highway** shall mean a common and public highway, street, avenue, parkway, laneway, driveway, square, place, and includes any bridge, trestle, viaduct or other structure forming part of the highway, including the area between the lateral property lines thereof and includes unopened and unassumed road allowances.

2.6 **Holiday** shall have the same meaning as defined in the Retail Business Holidays Act R.S.O. 1990, Chapter R.30

2.7 **Lawful** shall mean in compliance with Township by-laws, and any other applicable Provincial and Federal law.

2.8 **Noise** shall mean any sound or vibration and may include **Nuisance Noise**.

2.9 **Noise Exemption Permit** shall mean a permit issued under Section 6 of this by-law.

2.10 **Nuisance Noise** shall mean any sound or vibration that may be disruptive, excessive, obnoxious, repetitive, or otherwise offensive to the senses and that may be of such volume and/ or nature that it is likely to disturb and/ or interfere with the comfortable enjoyment of life or property.

2.11 **Officer** shall mean a Municipal Law Enforcement Officer, a Police Officer, or other **Person** appointed by the **Township Council** to enforce this by-law.

2.12 **Person** shall mean any individual, corporation, partnership, association, firm, trust, or other entity and includes anyone acting on behalf of or under the authority of such entity.

2.13 **Point of Reception** shall mean any place on a property where **Noise** from a separate property is clearly audible by a **Person**.

2.14 **Repeated False Alarms** shall mean false or malfunctioning fire, security, or safety alarms occurring more than twice per calendar year on a property and does not include a **Vehicle** alarm.

2.15 **Sound System** shall mean any electronic device or group of connected electronic devices incorporating one or more loudspeakers or other electro-mechanical transducers, and intended for the production, reproduction or amplification of sound.

2.16 **Tourist Entertainment Operation** shall mean a **Lawful** business which provides music (live or recorded) and serves alcoholic beverages to the public for consumption.

2.17 **Township** shall mean the Corporation of the Township of Muskoka Lakes.

2.18 **Vehicle** shall mean any vehicle that is driven by any kind of power including combustion engine, electronic motor, muscular power, gravitational power, or wind power and includes but is not limited to an automobile, motorcycle,

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dirtbike, all-terrain vehicle, motorized snow machine, recreational vehicle, bicycle, trailer, and tractor.

3.0 GENERAL EXEMPTIONS

3.1 The provisions of this by-law shall not apply to **Noise** generated or created by:

3.1.1 Any **Person, Vehicle,** or **Equipment** operated or authorized by emergency services, public services, essential services, the **Township**, District of Muskoka, Province of Ontario, or Government of Canada. This includes but is not limited to activities such as snow plowing or snow/ ice removal, **Construction**, waste removal, traffic control devices, and emergency/ disaster response.

3.1.2 Trains, railways and railway operations subject to regulation by the Government of Canada.

3.1.3 Aircraft, airports and airport operations subject to regulation by the Government of Canada.

3.1.4 Aggregate pits, quarries, and mines subject to regulation by the Government of Ontario and/or Government of Canada.

3.1.5 A manufacturing, processing, fabricating or assembly operation lawfully in existence and in continuous operation since prior to December 23, 2003.

3.1.6 Farming activities and farming animals recognized as a Normal Farm Practice as defined in the Farming and Food Production Act, 1998, S.O. 1998, Chapter 1, as amended, or any successor legislation, and carried on as part of a **Lawful** agricultural operation.

3.1.7 **Vehicles** being operated on any **Highway**, official trail, navigable waterway, or frozen waterway.

3.1.8 **Vehicles** or **Equipment** being operated in connection with the creation or maintenance of official trails.

3.1.9 The ringing of bells in connection with any **Lawful** place of worship or religious service.

3.1.10 The operation of any mechanical systems and power generation equipment including but not limited to a furnace, heat pump, air conditioner, or boiler.

3.1.11 The operation of any generator. This exemption does not apply to generators used in connection with **Construction**.

3.1.12 The operation of any **Vehicle** or **Equipment** for the purposes of snow plowing or snow/ ice removal on private and public property.

3.1.13 The ringing of fire alarms and security alarms. This shall not apply to **Repeated False Alarms.**

3.1.14 A Special Event which has a valid permit issued by the **Township** through the **Township's** Special Events By-law and is in compliance with the permit.

3.1.15 Activities within a **Township** owned or operated park or facility which has a valid permit issued by the **Township** through the **Township's** Parks and Facilities Use By-law and is in compliance with the permit.

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3.1.16 The discharge of fireworks in compliance with the **Township's** Fireworks By-law.

3.1.17 The discharge of firearms in compliance with the **Township's** Discharge of Firearms By-law.

4.0 GENERAL PROHIBITIONS – PROHIBITED NOISE AT ALL TIMES

4.1 No **Person** shall cause or permit the emission of any **Noise**, which is clearly audible at a **Point of Reception**, at any time, and in the opinion of an **Officer,** could be **Nuisance Noise.**

4.2 No **Person** shall cause or permit the emission of any **Nuisance Noise**, which is clearly audible at a **Point of Reception,** at any time, within 150 meters of a **Lawful** home for the aged, hospital, nursing home, retirement home, or other similar **Lawful** establishment.

4.3 No **Person** shall cause or permit the emission of any **Noise**, which is clearly audible at a **Point of Reception**, at any time, resulting from dogs or domestic animals that continuously and/or persistently bark, whine, howl, or make other similar sounds for a period exceeding fifteen (15) minutes.

4.4 No **Person** shall cause or permit the emission of any **Noise,** which is clearly audible at a **Point of Reception**, at any time, resulting from the operation of a sound emitting pest control or animal deterrent device.

4.5 No **Person** shall cause or permit the emission of any **Noise**, which is clearly audible at a **Point of Reception**, at any time, resulting from the use of any drum, horn, bell, radio, instrument, device, or **Sound System** for the purpose of advertising or attracting attention to any performance, show, sale of goods, wares, or merchandise.

4.6 No **Person** shall cause or permit the emission of any **Noise**, which is clearly audible at a **Point of Reception**, at any time, resulting from a **Repeated False Alarm.**

4.7 No **Person** shall cause or permit the emission of any **Noise**, which is clearly audible at a **Point of Reception**, at any time, resulting from the revving of any stationary engine or motor of a **Vehicle** for a continuous period exceeding fifteen (15) minutes. This does not include the revving or idling of such stationary engines or motors required for:

4.7.1 Regular operations or repairs of the engine.

4.7.2 Idling in low temperatures.

4.7.3 Idling for the health and safety of humans or animals.

4.8 No **Person** shall cause or permit the emission of any **Noise**, contrary to any agreement, permit, license, or other similar approval issued by the **Township**.

4.9 No **Person** shall cause or permit the emission of any **Noise**, which is clearly audible at a **Point of Reception**, at any time, resulting from a device or activity that is not **Lawful**.

5.0 SPECIFIC PROHIBITIONS

5.1 No **Person** shall cause or permit the emission of any **Noise**, which is clearly audible at a **Point of Reception,** between the hours of 11:00 pm one day to 7:00 am next day, resulting from the following devices or activities:

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5.1.1 The operation of any **Sound System**.

5.1.2 Continuous yelling, shouting, hooting, whistling, singing or other similar sounds made by a **Person**.

5.2 No **Person** shall cause or permit the emission of any **Noise**, which is clearly audible at a **Point of Reception**, between the hours of 9:00 pm one day to 7:00 am next day, resulting from the following devices or activities:

5.2.1 The operation of any auditory signaling device including but not limited to bells, gongs, horns, sirens, or whistles, or the production, reproduction, or amplification of any similar sounds by electronic means except where authorized or required by law or in accordance with safety practices.

5.2.2 The operation of any engine or motor which is used in, or is intended for use in a toy or model or replica of a larger device, which model or replica has no function other than amusement, and which is not a **Vehicle**.

Construction

5.3 No **Person** shall cause or permit the emission of any **Noise**, which is clearly audible at a **Point of Reception,** on the following days and times, resulting from the operation of **Vehicles** or **Equipment** in connection with **Construction,** or other similar commercial or domestic activities:

5.3.1 Monday 8:00 pm to Tuesday 6:00 am

5.3.2 Tuesday 8:00 pm to Wednesday 6:00 am

5.3.3 Wednesday 8:00 pm to Thursday 6:00 am

5.3.4 Thursday 8:00 pm to Friday 6:00 am

5.3.5 Friday 8:00 pm to Saturday 9:00 am

5.3.6 Saturday 8:00 pm to Sunday 9:00 am

5.3.7 Sunday 8:00 pm to Monday 6:00 am

Holidays

5.4 Notwithstanding Sections 5.2 and 5.3, no **Person** shall cause or permit the emission of any **Noise**, which is clearly audible at a **Point of Reception,** on **Holidays** before 9:00 am or on **Holidays** after 8:00 pm, resulting from:

5.4.1 The operation of **Vehicles** or **Equipment** in connection with **Construction**, or commercial or domestic activities.

5.4.2 The operation of devices or activities listed in Section 5.2.

Tourist Entertainment Operations

5.6 Every **Person** operating a **Tourist Entertainment Operation** shall comply with Section 5.1 of this by-law and shall comply with the following additional requirements:

5.6.1 All doors and windows of all buildings in connection with the **Tourist Entertainment Operation** shall close at 11:00 pm and stay closed until 7:00 am next day;

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5.6.2 The operation of all outdoor **Sound Systems** shall cease at 11:00 pm one day until 7:00 am next day; and

5.6.3 The operation of all indoor **Sound Systems** shall not emit any **Noise**, which is clearly audible at a **Point of Reception**, between the hours of 11:00 pm one day to 7:00 am next day.

5.7 Notwithstanding Section 5.6 of this by-law, every **Person** operating a **Tourist Entertainment Operation** on lands identified in Schedule A of this by-law shall be exempt from Section 5.1 of this by-law and shall comply with the following requirements:

5.7.1 All doors and windows of all buildings in connection with the **Tourist Entertainment Operation** shall close at 11:00 pm and stay closed until 7:00 am next day;

5.7.2 The operation of all outdoor **Sound Systems** shall cease at 11:00 pm one day until 7:00 am next day; and

5.7.3 Continuous yelling, shouting, hooting, whistling, singing or other similar sounds made by a **Person**, and/or the operation of all indoor **Sound Systems** shall not emit any **Noise**, which is clearly audible at a **Point of Reception**, on the follows days and times:

5.7.3.1 Monday 1:00 am to Monday 7:00 am

5.7.3.2 Tuesday 1:00 am to Tuesday 7:00 am

5.7.3.3 Tuesday 11:00 pm to Wednesday 7:00 am

5.7.3.4 Wednesday 11:00 pm to Thursday 7:00 am

5.7.3.5 Thursday 11:00 pm to Friday 7:00 am

5.7.3.6 Saturday 1:00 am to Saturday 7:00 am

5.7.3.7 Sunday 1:00 am to Sunday 7:00 am

6.0 NOISE EXEMPTION PERMIT

6.1 Notwithstanding the prohibitions contained in this by-law, any **Person** may apply for a **Noise Exemption Permit** to **Council**. An application for a **Noise Exemption Permit** shall be made to the Director of Legislative Services and shall be accompanied by an application fee as outlined in the **Township's** Fees and Charges By-Law currently in effect. The application shall be made 90 days in advance of the date in which the exemption is being sought and shall contain:

6.1.1 The name and address of the applicant;

6.1.2 The location, period of time, and date(s) for which the exemption is being sought;

6.1.3 A description of the **Noise** in respect of which the exemption is being sought;

6.1.4 A statement of the particular provision(s) of the by-law from which exemption is sought;

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6.1.5 The reason(s) why the exemption is being sought and why it should be granted; and

6.1.6 Any additional information deemed necessary by the **Township** to consider an application made under this section.

6.2 By a **Council** Resolution, **Council** may grant or refuse to grant any such **Noise Exemption Permit** application and may grant a conditional **Noise Exemption Permit** subject to any restrictions as **Council** deems appropriate. Any **Noise Exemption Permit** application refused by **Council** shall include written reasons for the decision. Any **Noise Exemption Permit** granted by **Council** shall specify the particulars of the exemption as set out in the application. In deciding whether to grant the exemption, **Council** shall give the application and any **Person** opposed to the application an opportunity to be heard and may consider such matters as it sees fit.

6.3 No **Person** shall cause or permit the emission of **Noise** contrary to a **Noise Exemption Permit**.

7.0 ENFORCEMENT

7.1 Any **Officer** may enforce the provisions of this by-law.

8.0 ORDERS

8.1 If an **Officer** is satisfied that a contravention of this by-law has occurred, the **Officer** may issue an **Order** requiring the **Person** who contravened this by-law or who caused or permitted the contravention or the owner or occupier of the land on which the contravention occurred to take actions to correct the contravention.

8.2 An **Order** shall contain:

8.2.1 The municipal address of the land, which may also include the roll number or property identification number associated with the land;

8.2.2 Reasonable particulars of the contraventions(s);

8.2.3 Action(s) that the **Person** must take to correct the contravention which may include discontinuing the contravening activity and any other requirement as deemed necessary by the **Officer**; and

8.2.4 The period in which there must be compliance.

8.3 An **Order** shall be served and may be served by one of the following methods:

8.3.1 Personally to the **Person** identified in the **Order** in which the **Order** is deemed to be served and effective immediately.

8.3.2 Posting the **Order** in a conspicuous place on the affected lands in which the **Order** is deemed to be served and effective immediately.

8.3.3 Facsimile transmission (fax) to the **Person** identified in the **Order** at their last known facsimile transmission number in which the **Order** is deemed to be served and effective immediately.

8.3.4 Electronic mail (email) to the **Person** identified in the **Order** at their last known electronic mail address in which the **Order** is deemed to be served and effective immediately upon the **Officer** receiving a written response from the **Person** identified in the **Order**. For the purposes of this section, a written response does not include a

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response that the **Person** cannot access the **Order** or an automatically generated response.

8.3.5 Registered mail to the **Person** identified in the **Order** at their last known address in which the **Order** is deemed to be served and effective on the 5th calendar day following the date in which the **Order** was sent.

8.4 An **Order** may require work to be done even though the facts which constitute the contravention of this by-law were present before this by-law making them a contravention came into force.

8.5 Every **Person** shall comply with an **Order** issued under this by-law.

8.6 No **Person** shall pull down, remove, or deface an **Order** posted under this by-law.

8.7 Every **Person** shall comply with an order issued by a court under Section 431 of the Municipal Act, 2001, S.O., 2001 c.25, as amended, pursuant to this by-law.

8.8 If a **Person** is not satisfied with the terms of an **Order**, they may request an appeal to be heard by the **Township Appeals Committee** by submitting an appeal form within 30 calendar days of receiving the **Order** upon paying the prescribed fee as set out in the **Township's** Fees and Charges By-law.

8.9 Matters subject to an appeal, as outlined in this by-law, shall be heard in compliance with the rules and regulations as set out for them, by the **Township Appeals Committee**.

9.0 ENTRY AND INSPECTION

9.1 An **Officer** may, at any reasonable time, enter and inspect any land to determine compliance with provisions of this by-law, compliance with a **Noise Exemption**, or compliance with an **Order** issued under this by-law or an order issued under Section 431 of the Municipal Act, 2001, S.O., 2001 c.25, as amended.

9.2 For the purpose of conducting an inspection pursuant to Section 9.1 of this by-law, an **Officer** may:

9.2.1 Require the production of documents or thing relevant to the inspection;

9.2.2 Inspect and remove documents or things relevant to the inspection for the purpose of making copies or extracts;

9.2.3 Require information from any **Person** concerning a matter related to the inspection; and

9.2.4 Alone or in conjunction with a **Person** possessing special or expert knowledge, make examination or take tests, samples or photographs necessary for the purpose of the inspection.

10.0 OBSTRUCTION

10.1 No **Person** shall hinder or obstruct, or attempt to hinder or obstruct, any **Officer** exercising a power or performing a duty under this by-law.

10.2 Any **Person** who is alleged to have contravened any of the provisions of this by-law shall identify themselves to the **Officer** upon request, failure to

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do so shall be deemed to have obstructed or hindered the **Officer** in the execution of his duties.

11.0 OFFENCES AND PENALTIES

11.1 Every **Person** who contravenes any provision of this By-law, and every director or officer of a corporation who knowingly concurs in the contravention of this By-law shall, upon the issuing of a Penalty Notice under the Administrative Monetary Penalty System By-law, be liable to pay the **Township** an Administrative Monetary Penalty in the amount set out in the Administrative Monetary Penalty System By-law.

11.2 Every **Person** who contravenes any section or provision of this by-law shall be guilty of an offence, as set out in Schedule C of this by-law.

11.3 Every **Person** who contravenes any provision of this By-law, and every director or officer of a corporation who knowingly concurs in the contravention of this By-law by the corporation is guilty of an offence and on conviction is liable to a fine as provided for in the Provincial Offences Act, R.S.O. 1990, c. P.33.

11.4 Every **Person** who contravenes any provision of this By-law, and every director or officer of a corporation who knowingly concurs in the contravention of this By-law by the corporation is guilty of an offence under the provisions of the Municipal Act, 2001, S.O. 2001, c. 25 as amended and is liable upon conviction to a penalty where a maximum fine shall not exceed $100,000 exclusive of costs under the provisions of the Municipal Act, 2001, S.O. 2001, c. 25 as amended.

11.5 Every **Person** who contravenes any provision of this By-law, and every director or officer of a corporation who knowingly concurs in the contravention of this By-law by the corporation is guilty of an offence under the provisions of the Municipal Act, 2001, S.O. 2001, c. 25 as amended and is also liable for a special fine in circumstances where there is an economic advantage or gain from the contravention of this By-law and the maximum amount of the special fine may exceed $100,000.

11.6 If there is a contravention of any provision of this By-law, and the contravention has not been complied with or corrected, the contravention of the provisions shall be designated as a continuous offence for each day or part of a day that the contravention remains uncorrected.

11.7 For the purposes of this By-law, if there is an offence respecting two or more acts or omissions, each of which separately constitutes an offence and is a contravention of the same provision of this By-law, then the offence is deemed to be a multiple offence.

11.8 For the purpose of continuous offences, every **Person** who contravenes any provision of this By-law, and every director or officer of a corporation who knowingly concurs in the contravention of this By-law by the corporation, is guilty of an offence and is liable upon conviction to a penalty not exceeding $10,000 per day or part thereof, exclusive of costs, under the provisions of the Municipal Act, 2001, S.O. 2001, c. 25 as amended.

11.9 For the purpose of multiple offences, every **Person** who contravenes any provision of this By-law, and every director or officer of a corporation who knowingly concurs in the contravention of this By-law by the corporation, is guilty of an offence and is liable upon conviction to a penalty not exceeding $10,000 per offence, exclusive of costs under the provisions of the Municipal Act, 2001, S.O. 2001, c. 25 as amended.

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11.10 Notwithstanding Sections 11.8 and 11.9, and in accordance with the provisions of the Municipal Act, 2001, S.O. 2001, c. 25 as amended, the total of all fines for continuous offences or multiple offences is not limited to $100,000.

12.0 SEVERABILITY AND VALIDITY

12.1 If a Court of competent jurisdiction should declare any Section or part of a Section of this By-law to be invalid, such section or part of a section shall not be construed as having persuaded or influenced **Council** to pass the remainder of the By-law and it is hereby declared that the remainder of the By-law shall be valid and shall remain in force.

13.0 SCHEDULES

13.1 Schedules A, B, and C are attached and form part of this by-law.

14.0 REPEAL

14.1 By-law 2005-083, 2022-030, and 2023-083 of the Corporation of the Township of Muskoka Lakes are hereby repealed.

15.0 EFFECTIVE DATE

15.1 This By-law shall come into force and take effect on the date of passage.

Read a **first**, **second** and **third time** and **finally passed** this **X day of May, 2026.**

_____

Peter Kelley, Mayor

_____

Crystal Best-Sararas, Clerk

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THE CORPORATION OF THE TOWNSHIP OF MUSKOKA LAKES

SCHEDULE “A” OF BY-LAW 2026-XXX

Legal Description of Specified Lands

48029-0597
WOOD CON 7 PT LOT 33 PLAN 1; PT LOTS 5 AND 6 RP 35R20449; PARTS 1 TO 9; MUSKOKA LAKES; THE DISTRICT MUNICIPALITY OF MUSKOKA

“Kee to Bala”

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THE CORPORATION OF THE TOWNSHIP OF MUSKOKA LAKES

SCHEDULE "B" OF BY-LAW 2026-XXX

Noise Guide

Section	Noise	Prohibited Time	Permitted Time
4.1	**Nuisance Noise**	At all times	Never
4.2	**Nuisance Noise** within 150 meters of a hospital, nursing home, senior's rest home, or hospice centre	At all times	Never
4.3	Dogs or domestic animals that continuously and/or persistently bark, whine, howl, or make other similar sounds for a period exceeding fifteen (15) minutes.	At all times	Never
4.4	Sound emitting pest control or animal deterrent device	At all times	Never
4.5	A **Sound System** or other instrument or device used for advertising	At all times	Never
4.6	**Repeated False Alarms**	At all times	Never
4.7	Revving of an engine exceeding 15 minutes	At all times	Never
4.8	Noise contrary to any Township approval	At all times	Never
4.9	Noise from an **Unlawful** device or activity	At all times	Never
5.1.1	**Sound Systems**	11:00 pm one day to 7:00 am next day	7:00 am to 11:00 pm
5.1.2	Continuous yelling and similar sounds made by a **Person**	11:00 pm one day to 7:00 am next day	7:00 am to 11:00 pm
5.2.1 5.4.2	Auditory signaling device and similar devices	9:00 pm one day to 7:00 am next day **Holidays** 8:00 pm to 9:00 am	7:00 am to 9:00 pm **Holidays** 9:00 am to 8:00 pm

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Section	Noise	Prohibited Time	Permitted Time
5.2.2 5.4.2	Replica or toy model engine	9:00 pm one day to 7:00 am next day **Holidays** 8:00 pm to 9:00 am	7:00 am to 9:00 pm **Holidays** 9:00 am to 8:00 pm
5.3

Section	Noise	Prohibited Time	Permitted Time
5.7.3	Continuous yelling, shouting, hooting, whistling, singing, or other similar sounds made by a Person and indoor **Sound Systems** at **Tourist Entertainment Operations** on lands identified in Schedule A	Monday 1:00 am to Monday 7:00 am Tuesday 1:00 am to Tuesday 7:00 am Tuesday 11:00 pm to Wednesday 7:00 am Wednesday 11:00 pm to Thursday 7:00 am Thursday 11:00 pm to Friday 7:00 am Saturday 1:00 am to Saturday 7:00 am Sunday 1:00 am to Sunday 7:00 am	Monday 7:00 am to Tuesday 1:00 am Tuesday 7:00 am to Tuesday 11:00 pm Wednesday 7:00 am to Wednesday 11:00 pm Thursday 7:00 am to Thursday 11:00 pm Friday 7:00 am to Saturday 1:00 am Saturday 7:00 am to Sunday 1:00 am Sunday 7:00 am to Monday 1:00 am

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THE CORPORATION OF THE TOWNSHIP OF MUSKOKA LAKES

SCHEDULE “C” OF BY-LAW 2026-XXX

Part I Provincial Offences Act: Set Fines

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Legend

Green = Item has been newly added

Red = Item has been deleted

Noise Control By-law 2005-083	Changes Made	Draft Noise By-law
Definitions		
Section 1. a) “construction” includes erection, alteration, repair, dismantling, demolition, structural maintenance, painting, moving, land clearing, earth moving, grading, excavating, blasting, rock crushing, the laying of pipe and conduit whether above or below ground level, street and highway building, concreting equipment installation and alteration and the structural installation of construction components and material in any form or for any purpose and includes any work in connection therewith.	Modify	Section 2.2 Construction shall mean any activity which includes erection, alteration, repair, dismantling, demolition, waste removal, structural maintenance, painting, moving, landscaping, land clearing, earth moving, grading, excavating, blasting, rock crushing, forestry operation, logging, equipment delivery, material delivery, the laying of pipe and conduit whether above or below ground level, street and highway building, concreting equipment installation and alteration and the structural installation of construction components and materials in any form or for any purpose, and includes any work in connection therewith.
Section 1. b) “construction equipment” means any equipment or device designed and intended for use in construction or material handling, including but not limited to, air compressors, pile drivers, pneumatic or hydraulic tools, bulldozers, tractors, excavators, trenchers, cranes, derricks, loaders, scrapers, pavers, generators, off-highway haulers or trucks, ditchers, compactors and rollers, pumps, concrete mixers, graders, or other material handling equipment.	Modify	Section 2.4 Equipment shall mean any equipment, tool, or device designed or intended for any use and includes but is not limited to wood splitters, chainsaws, sawmills, power tools, compressors, pile drivers, pneumatic or hydraulic tools, bulldozers, tractors, scrapers, pavers, generators, off-highway haul trucks, ditchers, compactors, rollers, pumps, concrete mixers, graders, snow making machine, or other material handling equipment. Section 3.1.11 The provisions of this by-law shall not apply to Noise generated or created by: The operation of any generator. This exemption does not apply to generators used in connection with Construction.
Section 1. c) “conveyance” includes a motor vehicle and any other device employed to transport a person or persons or goods from place to place but does not include any such device or vehicle if operated only within a building.	Remove	Does not exist. Combined with the definition of Vehicle in Section 2.18.
Section 1. d) “Council” means the Council of the Corporation of the Township of Muskoka Lakes.	Maintain	Section 2.3 Council shall mean the Council for the Corporation of the Township of Muskoka Lakes.

Noise Control By-law 2005-083	Changes Made	Draft Noise By-law
Section 1. e) “highway” includes a common and public highway, street, avenue, parkway, driveway, square, place, bridge, viaduct or trestle designed and intended for, or used by, the general public for the passage of vehicles.	Modify	Section 2.5 Highway shall mean a common and public highway, street, avenue, parkway, laneway, driveway, square, place, and includes any bridge, trestle, viaduct or other structure forming part of the highway, including the area between the lateral property lines thereof and includes unopened and unassumed road allowances.
Section 1. f) “motor vehicle” includes an automobile, motorcycle, and any other vehicle propelled or driven otherwise than by muscular power; but does not include the cars of electric or steam railways, or the motor vehicles running only upon rails, or a traction engine, farm tractor, self-propelled implement of husbandry or road-building machine within the meaning of the Highway Traffic Act.	Modify	Section 2.18 Vehicle shall mean any vehicle that is driven by any kind of power including combustion engine, electronic motor, muscular power, gravitational power, or wind power and includes but is not limited to an automobile, motorcycle, dirtbike, all-terrain vehicle, motorized snow machine, recreational vehicle, bicycle, trailer, and tractor.
Section 1. g) “motorized conveyance” means a conveyance propelled or driven otherwise than by muscular, gravitational or wind power.	Remove	Does not exist. Combined with the definition of Vehicle in Section 2.18.
Section 1. h) “noise” means a sound prohibited by this by-law.	Modify	Section 2.8 Noise shall mean any sound or vibration and may include Nuisance Noise. Section 2.10 Nuisance Noise shall mean any sound or vibration that may be disruptive, excessive, obnoxious, repetitive, or otherwise offensive to the senses and that may be of such volume and/ or nature that it is likely to disturb and/ or interfere with the comfortable enjoyment of life or property.
Section 1. i) “point of reception” means any point on the premises of a person where sound originating from other than those premises is received.	Modify	Section 2.13 Point of Reception shall mean any place on a property where Noise from a separate property is clearly audible by a Person.
Section 1. j) “public park” means any open space or recreational area, owned or controlled by the Corporation of the Township of Muskoka Lakes or any board, commission or other authority established under any statute of the Province of Ontario and may include one or more athletic fields, field houses, community centres, bleachers, swimming pools, bandstands, skating rinks, tennis courts, bowling greens, boat liveries, bathing stations, curling rinks, refreshment rooms, fair grounds, arenas or similar uses.	Remove	Does not exist. Not necessary to define.
Section 1. k) Special Event has the same meaning as in the Township’s Special Event Permit By-law.	Remove	Does not exist. Not necessary to define.

Noise Control By-law 2005-083	Changes Made	Draft Noise By-law
Section 1. l) “Township” means the Corporation of the Township of Muskoka Lakes.	Maintain	Section 2.17 Township shall mean the Corporation of the Township of Muskoka Lakes.
Section 1. m) “Zone 1” means every area designated by zoning by-law as Residential – R1, Residential R2, Residential R3, Residential R4, Residential R5, Residential R6, Multiple Residential RM1, Multiple Residential RM2 or Institutional I in the Township; and every area within a Community Commercial zone designated by zoning by-law in which there is one or more dwelling units as defined by zoning by-law.	Remove	Does not exist. In Noise Control By-law 2008-083, each designated zone was prescribed identical regulations. For Draft Noise By-law, staff recommended to maintain the status quo and not prescribe unique regulations to designated zones. Therefore, it is not necessary to define zones in the Draft Noise By-law.
Section 1. n) “Zone 2” means every area designated by zoning by-law as Waterfront Residential WR, Waterfront Residential WR1, Waterfront Residential WR2, Waterfront Residential WR3, Waterfront Residential WR4, Waterfront Residential WR5, Waterfront Residential WR6, Waterfront Residential WR8, Waterfront Landing WL, Waterbody Open Space WOS, or Environmental Protection EP1 or EP2 in the Township.	Remove	Does not exist. In Noise Control By-law 2008-083, each designated zone was prescribed identical regulations. For Draft Noise By-law, staff recommended to maintain the status quo and not prescribe unique regulations to designated zones. Therefore, it is not necessary to define zones in the Draft Noise By-law.
Section 1. o) “Zone 3” means every area designated as Rural Ru1, Rural Ru2, Rural Ru3, Rural Residential RuR, Open Space OS1, Open Space OS2, Open Space OS3, Open Space OS4 or General Restricted GR in the Township.	Remove	Does not exist. In Noise Control By-law 2008-083, each designated zone was prescribed identical regulations. For Draft Noise By-law, staff recommended to maintain the status quo and not prescribe unique regulations to designated zones. Therefore, it is not necessary to define zones in the Draft Noise By-law.
Regulations		
Section 2 No person shall emit or cause or permit the emission of sound resulting from any act listed in Schedule 1 – General Prohibitions, and which sound is clearly audible at a point of reception Schedule 1 – General Prohibitions	Modify	Draft Noise By-law was reformatted. Section 2 has been removed and all regulations in Schedule 1 has been integrated into Section 4 and Section 5 of the Draft Noise By-law and as indicated below in this table. Schedule 1 of the Draft Noise By-law establishes a designated lands that relate to Section 5.7 of the Draft Noise By-law.
Did not exist.	Add	Section 4.1 No Person shall cause or permit the emission of any Noise, which is clearly audible at a Point of Reception, at any time, and in the opinion of an Officer, could be Nuisance Noise.

Noise Control By-law 2005-083	Changes Made	Draft Noise By-law
Did not exist.	Add	Section 4.2 No Person shall cause or permit the emission of any Nuisance Noise, which is clearly audible at a Point of Reception, at any time, within 150 meters of a Lawful home for the aged, hospital, nursing home, retirement home, or other similar Lawful establishment.
Schedule 1, Section 1 The operation of an engine or motor in, or on, any motor vehicle or item of attached auxiliary equipment, for a continuous period exceeding five minutes, while such vehicle is stationary in Zone 1 unless: a) the original equipment manufacturer specifically recommends a longer idling period for normal and efficient operation of the motor vehicle in which case such recommended period shall not be exceeded; or b) operation of such engine or motor is essential to a basic function of the vehicle or equipment, including but not limited to, operation of ready-mixed concrete trucks, lift platforms and refuse compactors; or c) weather conditions justify the use of heating or refrigeration systems powered by the motor or engine for the safety and welfare of the operator, passengers or animals or the preservation of perishable cargo; or d) prevailing low temperatures make longer idling periods necessary, immediately after starting the motor or engine; or e) the idling is for the purpose of cleaning and flushing the radiator and associated circulation system for seasonal change of antifreeze, cleaning of the fuel system, carburetor or the like, when such work is performed other than for profit.	Modify	Section 4.7. No Person shall cause or permit the emission of any Noise, which is clearly audible at a Point of Reception, at any time, resulting from the revving of any stationary engine or motor of a Vehicle for a continuous period exceeding fifteen (15) minutes. This does not include the revving or idling of such stationary engines or motors required for: 4.7.1. Regular operations or repairs of the engine. 4.7.2. Idling in low temperatures. 4.7.3. Idling for the health and safety of humans or animals.
Schedule 1, Section 2 Barking, whining or other similar persistent sound made by a dog or a domestic pet, for a continuous period exceeding thirty (30) minutes, in any part of the Township. The owner of the dog or pet and any other person having control over it at the time of emission of the sound is liable for contravention of this by-law.	Modify	Section 4.3 No Person shall cause or permit the emission of any Noise, which is clearly audible at a Point of Reception, at any time, resulting from dogs or domestic animals that continuously and/or persistently bark, whine, howl, or make other similar sounds for a period exceeding fifteen (15) minutes.
Schedule 1, Section 3 Yelling, shouting, hooting, whistling, singing or other similar human sound in any part of the Township between 23:00 hours (11:00 p.m.) and 07:00hours (7:00 a.m.) the following day.	Maintain	Section 5.1.2 No Person shall cause or permit the emission of any Noise, which is clearly audible at a Point of Reception, between the hours of 11:00 pm one day to 7:00 am next day, resulting from the following devices or activities: Continuous yelling, shouting, hooting, whistling, singing or other similar sounds made by a Person.

Noise Control By-law 2005-083	Changes Made	Draft Noise By-law
Did not exist.	Add	Section 4.4 No Person shall cause or permit the emission of any Noise, which is clearly audible at a Point of Reception, at any time, resulting from the operation of a sound emitting pest control or animal deterrent device.
Did not exist.	Add	Section 4.5 No Person shall cause or permit the emission of any Noise, which is clearly audible at a Point of Reception, at any time, resulting from the use of any drum, horn, bell, radio, instrument, device, or Sound System for the purpose of advertising or attracting attention to any performance, show, sale of goods, wares, or merchandise.
Did not exist.	Add	Section 4.6 No Person shall cause or permit the emission of any Noise, which is clearly audible at a Point of Reception, at any time, resulting from a Repeated False Alarm. Section 2.14 Repeated False Alarms shall mean false or malfunctioning fire, security, or safety alarms occurring more than twice per calendar year on a property and does not include a Vehicle alarm.
Did not exist	Add	Section 4.8 No Person shall cause or permit the emission of any Noise, contrary to any agreement, permit, license, or other similar approval issued by the Township.
Did not exist	Add	Section 4.9 No Person shall cause or permit the emission of any Noise, which is clearly audible at a Point of Reception, at any time, resulting from a device or activity that is not Lawful.
Section 3 No person shall emit or cause or permit the emission of sound resulting from any act listed in Schedule 2 – Prohibitions by Time and Place, which is clearly audible at a point of reception located in a Zone specified in Schedule 2 within the prohibited time shown for such Zone. Schedule 2	Modify	Draft Noise By-law was reformatted. Section 3 has been removed and all regulations in Schedule 2 has been integrated into various sections of the Draft Noise By-law as indicated in this table. Schedule 2 of the Draft Noise By-law establishes a Noise Guide, intended to be used for public education.
Schedule 2, Section 1 The detonation of fireworks or explosive devices not used in construction is prohibited between 11:00 pm to 7:00 am	Modify	Section 3.1.16 The provisions of this by-law shall not apply to Noise generated or created by: The discharge or fireworks in compliance with the Township's Fireworks By-law.

Noise Control By-law 2005-083	Changes Made	Draft Noise By-law
Schedule 2, Section 2 The operation of any electronic device or group of connected electronic devices incorporating one or more loudspeakers or other electro-mechanical transducers, and intended for the production, reproduction or amplification of sound is prohibited between 11:00 pm to 7:00 am.	Maintain	Section 5.1.1 No Person shall cause or permit the emission of any Noise, which is clearly audible at a Point of Reception, between the hours of 11:00 pm one day to 7:00 am next day, resulting from the following devices or activities: The operation of any Sound System. Section 2.15 Sound System shall mean any electronic device or group of connected electronic devices incorporating one or more loudspeakers or other electro-mechanical transducers, and intended for the production, reproduction or amplification of sound.
Schedule 2, Section 3 The operation of any auditory signaling device, including but not limited to the ringing of bells or gongs and the blowing of horns or sirens or whistles, or the production, reproduction or amplification of any similar sounds by electronic means except where required or authorized by law or in accordance with good safety practices is prohibited between 9:00 pm and 7:00 am.	Maintain	Section 5.2.1 No Person shall cause or permit the emission of any Noise, which is clearly audible at a Point of Reception, between the hours of 9:00 pm one day to 7:00 am next day, resulting from the following devices or activities: The operation of any auditory signaling device including but not limited to bells, gongs, horns, sirens, or whistles, or the production, reproduction, or amplification of any similar sounds by electronic means except where authorized or required by law or in accordance with safety practices.

Noise Control By-law 2005-083	Changes Made	Draft Noise By-law
Schedule 2, Section 4 The operation of any construction equipment or in connection with construction; or the operation of a chain saw is prohibited 21:00 one day to 06:00 next day Sunday to Friday, 21:00 one day to 09:00 next day Saturday (9:00 p.m. to 6:00 a.m. Sunday to Friday; 9:00 p.m. Saturday to 9:00 a.m. next day). Schedule 2, Section 7 The operation of any powered or nonpowered tool for domestic purposes other than snow removal is prohibited between 11:00 pm and 7:00 am.	Modify & Combine	Section 5.3 No Person shall cause or permit the emission of any Noise, which is clearly audible at a Point of Reception, on the following days and times, resulting from the operation of Vehicles or Equipment in connection with Construction, or other similar commercial or domestic activities: 5.3.1 Monday 8:00 pm to Tuesday 6:00 am 5.3.2 Tuesday 8:00 pm to Wednesday 6:00 am 5.3.3 Wednesday 8:00 pm to Thursday 6:00 am 5.3.4 Thursday 8:00 pm to Friday 6:00 am 5.3.5 Friday 8:00 pm to Saturday 9:00 am 5.3.6 Saturday 8:00 pm to Sunday 9:00 am 5.3.7 Sunday 8:00 pm to Monday 6:00 am Section 5.4 Notwithstanding Sections 5.2 and 5.3, no Person shall cause or permit the emission of any Noise, which is clearly audible at a Point of Reception, on Holidays before 9:00 am or on Holidays after 8:00 pm, resulting from: 5.4.1 The operation of Vehicles or Equipment in connection with Construction, or commercial or domestic activities. 5.4.2 The operation of devices and activities listed in Section 5.2. Section 2.6 Holiday shall have the same meaning as defined in the Retail Business Holidays Act R.S.O. 1990, Chapter R.30* *New Year's Day, Good Friday, Easter Sunday, Victoria Day, Canada Day, Labour Day, Thanksgiving Day, Christmas Day
Schedule 2, Section 5 The operation of any combustion engine which is used in, or is intended for use in a toy or model or replica of a larger device, which model or replica has no function other than amusement and which is not a conveyance is prohibited between 11:00 pm and 7:00 am.	Modify	Section 5.2.2 No Person shall cause or permit the emission of any Noise, which is clearly audible at a Point of Reception, between the hours of 9:00 pm one day to 7:00 am next day, resulting from the following devices or activities: The operation of any engine or motor which is used in, or is intended for use in a toy or model or replica of a larger device, which model or replica has no function other than amusement, and which is not a Vehicle.

Noise Control By-law 2005-083	Changes Made	Draft Noise By-law
Schedule 2, Section 6 The operation of any motorized conveyance other than on a highway or authorized snowmobile trail is prohibited between 11:00 pm and 7:00 am.	Remove	Does not exist.
Exemptions		
Section 4 – Exemption – Public Safety a) Public Safety Despite any other provision of this by-law, it is lawful to emit or cause or permit the emission of sound in connection with emergency measures undertaken; i) for the immediate health, safety or welfare of the inhabitants or any of them; ii) for the preservation or restoration of property; unless such sound is clearly of a longer duration, or nature more disturbing than is reasonably necessary, for the accomplishment of such emergency purpose.	Modify	Section 3.1.1 The provisions of this by-law shall not apply to Noise generated or created by: Any Person, Vehicle, or Equipment operated or authorized by emergency services, public services, essential services, the Township, District of Muskoka, Province of Ontario, or Government of Canada. This includes but is not limited to activities such as snow plowing or snow/ ice removal, Construction, waste removal, traffic control devices, and emergency/ disaster response.

Noise Control By-law 2005-083	Changes Made	Draft Noise By-law
Section 5 – Exemptions – General a) Pending the development of criteria for exemptions, general exemptions from the terms of this By-law are not authorized. There is no fixed date by which such criteria must be developed. B) Nothing in this section prevents any person from making an application to Council at any time for the passage of a by-law which will establish exemption criteria for a class of persons or a class of businesses, pending completion of the development of criteria for exemptions generally.	Modify	Section 6 – Noise Exemption Permit 6.1 Notwithstanding the prohibitions contained in this by-law, any Person may apply for a Noise Exemption Permit to Council. An application for a Noise Exemption Permit shall be made to the Director of Legislative Services and shall be accompanied by an application fee as outlined in the Township's Fees and Charges By-Law currently in effect. The application shall be made 90 days in advance of the date in which the exemption is being sought and shall contain: 6.1.1 The name and address of the applicant; 6.1.2 The location, period of time, and date(s) for which the exemption is being sought; 6.1.3 A description of the Noise in respect of which the exemption is being sought; 6.1.4 A statement of the particular provision(s) of the by-law from which exemption is sought; 6.1.5 The reason(s) why the exemption is being sought and why it should be granted; and 6.1.6 Any additional information deemed necessary by the Township to consider an application made under this section. 6.2 By a Council Resolution, Council may grant or refuse to grant any such Noise Exemption Permit application and may grant a conditional Noise Exemption Permit subject to any restrictions as Council deems appropriate. Any Noise Exemption Permit application refused by Council shall include written reasons for the decision. Any Noise Exemption Permit granted by Council shall specify the particulars of the exemption as set out in the application. In deciding whether to grant the exemption, Council shall give the application and any Person opposed to the application an opportunity to be heard and may consider such matters as it sees fit. 6.3 No Person shall cause or permit the emission of Noise contrary to a Noise Exemption Permit.

Noise Control By-law 2005-083	Changes Made	Draft Noise By-law
Section 5 Exemption – Religious Activities This by-law does not apply to a person who emits or causes or permits the emission of sound in connection with any of the traditional, festive, religious and other activities listed below: a) the use of an apparatus or mechanism for the amplification of the human voice or of music in a public park or recreational area under the control and management of the Township in connection with any public election meeting, public celebration or other lawful gathering, provided that written permission of Council to hold such meeting, celebration or gathering has been first obtained under any applicable by-law of the Township. B) Any band or parade, provided that written permission of Council to operate such band or hold such parade has been first obtained under any applicable by-law of the Township. C) The use of church bells or chimes normally associated with church activities. D) All activities permitted by Council associated with an event authorized by Council.	Modify	Section 3.1.8 The provisions of this by-law shall not apply to Noise generated or created by: The ringing of bells in connection with any Lawful place of worship or religious service. Section 3.1.14 The provisions of this by-law shall not apply to Noise generated or created by: A Special Event which has a valid permit issued by the Township through the Township's Special Events By-law and is in compliance with the permit. Section 3.1.15 The provisions of this by-law shall not apply to Noise generated or created by: Activities within a Township owned or operated park or facility which has a valid permit issued by the Township through the Township's Parks and Facilities Use By-law and is in compliance with the permit.

Noise Control By-law 2005-083	Changes Made	Draft Noise By-law
Section 6 – TEO Exemption a) For the purposes of this section, music includes singing, chanting, the playing of musical instruments, and the emission of sound from electronically amplified speakers. B) For the purposes of this section, a tourist entertainment operation is a business which provides music (live or recorded) and serves alcoholic beverages to the general public for compensation. C) Pending the development of further criteria for tourist entertainment operations, a tourist entertainment operation is not in contravention of Schedule 2 section 2 of this By-law if all of the following are satisfied: (i) no music is produced or emitted outside each building used by the operation. (ii) the windows of each such building are kept closed during the production or emission of music within the building. (iii) the production or emission of music ends no later than 1:30 a.m. d) The exemptions provided by subsection (c) of this section apply only to the prohibition in Schedule 2 section 2, and do not apply to any other prohibition in this By-law. E) Any noise related to activities permitted in a valid Special Event Permit during the permitted hours of the event. Where notice has been given to residents of the Township of the Special Event and of the hours of the event by the organizers of the approved special event permit.	Modify	Section 5.6 Every Person operating a Tourist Entertainment Operation shall comply with Section 5.1 of this by-law and shall comply with the following requirements: 5.6.1 All doors and windows of all buildings in connection with the Tourist Entertainment Operation shall close at 11:00 pm and stay closed until 7:00 am next day; 5.6.2 The operation of all outdoor Sound Systems shall cease at 11:00 pm one day until 7:00 am next day; and 5.6.3 The operation of all indoor Sound Systems shall not emit any Noise, which is clearly audible at a Point of Reception, between the hours of 11:00 pm one day to 7:00 am next day. Section 5.7 Notwithstanding Section 5.6 of this by-law, every Person operating a Tourist Entertainment Operation on lands identified in Schedule A of this by-law shall be exempt from Section 5.1 of this by-law and shall comply with the following requirements: 5.7.1 All doors and windows of all buildings in connection with the Tourist Entertainment Operation shall close at 11:00 pm and stay closed until 7:00 am next day; 5.7.2 The operation of all outdoor Sound Systems shall cease at 11:00 pm one day until 7:00 am next day; and 5.7.3 Continuous yelling, shouting, hooting, whistling, singing or other similar sounds made by a Person, and/or the operation of all indoor Sound Systems shall not emit any Noise, which is clearly audible at a Point of Reception, on the follows days and times: 5.7.3.1 Monday 1:00 am to Monday 7:00 am 5.7.3.2 Tuesday 1:00 am to Tuesday 7:00 am 5.7.3.3 Tuesday 11:00 pm to Wednesday 7:00 am 5.7.3.4 Wednesday 11:00 pm to Thursday 7:00 am 5.7.3.5 Thursday 11:00 pm to Friday 7:00 am 5.7.3.6 Saturday 1:00 am to Saturday 7:00 am 5.7.3.7 Sunday 1:00 am to Sunday 7:00 am Section 2.16 Tourist Entertainment Operation shall mean a Lawful business which provides music (live or recorded) and serves alcoholic beverages to the public for consumption.

Noise Control By-law 2005-083	Changes Made	Draft Noise By-law
Did not exist.	Add	Section 3.1.2 The provisions of this by-law shall not apply to Noise generated or created by: Trains, railways and railway operations subject to regulation by the Government of Canada.
Did not exist.	Add	Section 3.1.3 The provisions of this by-law shall not apply to Noise generated or created by: Aircraft, airports and airport operations subject to regulation by the Government of Canada.
Did not exist.	Add	Section 3.1.4 The provisions of this by-law shall not apply to Noise generated or created by: Aggregate pits, quarries, and mines subject to regulation by the Government of Ontario and/or Government of Canada.
Did not exist.	Add	Section 3.1.5 The provisions of this by-law shall not apply to Noise generated or created by: A manufacturing, processing, fabricating or assembly operation lawfully in existence and in continuous operation since prior to December 23, 2003.
Did not exist.	Add	Section 3.1.6 The provisions of this by-law shall not apply to Noise generated or created by: Farming activities and farming animals recognized as a Normal Farm Practice as defined in the Farming and Food Production Act, 1998, S.O. 1998, Chapter 1, as amended, or any successor legislation, and carried on as part of a Lawful agricultural operation.
Did not exist.	Add	Section 3.1.7 The provisions of this by-law shall not apply to Noise generated or created by: Vehicles being operated on any Highway, official trail, navigable waterway, or frozen waterway.
Did not exist.	Add	Section 3.1.8 The provisions of this by-law shall not apply to Noise generated or created by: Vehicles or Equipment being operated in connection with the creation or maintenance of official trails.
Did not exist.	Add	Section 3.1.9 The provisions of this by-law shall not apply to Noise generated or created by: The ringing of bells in connection with any Lawful place of worship or religious service.

Noise Control By-law 2005-083	Changes Made	Draft Noise By-law
Did not exist.	Add	Section 3.1.10 The provisions of this by-law shall not apply to Noise generated or created by: The operation of any mechanical systems and power generation equipment including but not limited to a furnace, heat pump, air conditioner, or boiler.
Did not exist.	Add	Section 3.1.11 The provisions of this by-law shall not apply to Noise generated or created by: The operation of any generator. This exemption does not apply to generators used in connection with Construction.
Did not exist.	Add	Section 3.1.12 The provisions of this by-law shall not apply to Noise generated or created by: The operation of any Vehicle or Equipment for the purposes of snow plowing or snow/ ice removal on private and public property.
Did not exist.	Add	Section 3.1.13 The provisions of this by-law shall not apply to Noise generated or created by: The ringing of fire alarms and security alarms. This shall not apply to Repeated False Alarms.
Did not exist.	Add	Section 3.1.14 The provisions of this by-law shall not apply to Noise generated or created by: A Special Event which has a valid permit issued by the Township through the Township's Special Events By-law and is in compliance with the permit.
Did not exist.	Add	Section 3.1.15 The provisions of this by-law shall not apply to Noise generated or created by: Activities within a Township owned or operated park or facility which has a valid permit issued by the Township through the Township's Parks and Facilities Use By-law and is in compliance with the permit.
Did not exist.	Add	Section 3.1.16 The provisions of this by-law shall not apply to Noise generated or created by: The discharge of fireworks in compliance with the Township's Fireworks By-law.
Did not exist.	Add	Section 3.1.17 The provisions of this by-law shall not apply to Noise generated or created by: The discharge of firearms in compliance with the Township's Discharge of Firearms By-law.
Enforcement & Offences		

Noise Control By-law 2005-083	Changes Made	Draft Noise By-law
Did not exist.	Add	Section 8 – Orders Officers can issue Orders requiring a person to discontinue a contravening activity. Orders can be appealed through the Township's Appeals Committee. It is an offence to fail to comply with an Order.

Staff Report PLAN-2026-086
Planning Committee
June 11, 2026

TO: **Chair Bosomworth and Members of Planning Committee**

AUTHOR: **Jennifer Huff, Director, Development Services and Environmental Sustainability**

SUBJECT: **ZBA-27/25 (BROWN), Lot 32, Concession 3, Lot 19, Plan 7 (Medora) – no civic address, Roll #: 5-8-085**

RECOMMENDATIONS

THAT Zoning By-law Amendment Application ZBA-27/25 (BROWN) be APPROVED, subject to the following:

- That revisions be made to the draft By-law to:
    - Remove the exemption request for 0 m lot frontage;
    - Amend the minimum ground floor area provision from 49.1 sq m to 48.6 sq m; and
    - implement the required wording to incorporate the Holding (-H) provision, as detailed below;

- That a Holding (-H) provision be placed on the lands for the following:

I. A Functional Servicing Report (FSR) has been submitted to the satisfaction of the District Municipality of Muskoka;

II. That hydraulic modelling be completed and that any required improvements be implemented to the satisfaction of the District Municipality of Muskoka; and

III. Availability of water and sewer capacity be confirmed to the satisfaction of the District Municipality of Muskoka.

REPORT HIGHLIGHTS

This report provides analysis and recommendations on Zoning By-law Application ZBA-27/25 (BROWN). Through policy analysis, a site visit, and desktop review of available information, staff have concluded that the application is consistent with the Provincial Planning Statement, 2024, and conforms to the District of Muskoka and Township of Muskoka Lakes 2023 Official Plan, subject to the recommendations detailed above.

BACKGROUND

Deferral

By way of background, the proposal includes the development of eight townhouse units on Silver Street, Port Carling. Services are proposed to be extended along Silver Street so that all units will be connected to full municipal services. The proposed townhouses are to be constructed on an existing lot within an existing approved plan of subdivision. Once completed, separate townhouse lots will be created for each townhouse unit through Part Lot Control (PLC) under Section 50(28) of the Planning Act. The PLC application will be submitted to the District of Muskoka, and while the Township will provide comments on the application, no additional public meetings will be required.

On November 13, 2025, a public meeting was held for the subject application. In support of the public meeting, staff presented Report PLAN-2025-14, which provided a detailed overview of the proposal, including a description of the purpose and effect of the application. As well, an overview of the submitted technical studies completed to date plus agency and public comments received to date were provided.

The public meeting was well attended by area residents voicing a variety of concerns with the proposal. A summary of the public feedback and how it was or was not addressed is provided in the report below.

The public meeting concluded with a recommendation that a decision on the application be deferred for staff to undertake a review and analysis of submissions received in response to the application. This recommendation was approved by Planning Committee and Council.

Following the public meeting, staff met with the applicant and their agent to discuss various technical matters, including parking, modifying the shape of the Silver Street cul-de-sac to provide municipal ditches within the road allowance and street frontage along each unit. Staff also met with area neighbours to discuss their concerns with the application.

Updates

The applicant has updated several items discussed at the initial Planning Committee meeting and subsequent meeting held between staff and the applicant. The updates are summarized as follows:

1. Updated Site Plan, May 1, 2026 (See Figure 2 below). This updated site plan shows the modest reorientation of the Silver Street cul-de-sac into a “P” shape. This configuration will allow for all municipal ditches to be located on the public road allowance where they were previously located in part on private property. It also allows for the continuation of street frontage along each of the eight units,

thereby eliminating the need for the zoning exemptions requesting 0 m lot frontage. Operational Services has reviewed this updated site plan and advised that it has no concerns with the revised configuration. Any further minor technical modifications can be made during site plan control. The amended site plan does not create any additional deficiencies relative to the zoning regulations.

2. Updated Functional Servicing and Stormwater Management Report, May 1st, 2026. This updated report continues to demonstrate that there will be no increase in runoff directed to adjacent private properties and there is no downstream flood impact concern associated with this development on the Indian River. It also shows the relocation of the municipal hydrant to the end of the cul-de-sac to account for the redesign of the cul-de-sac into a 'P' shape.
3. Updated Garage Floor Plan (see Figure 4). The applicant has modified the garage floor plan by increasing its width and removing the stairs in the garage to accommodate the minimum size of a parking space of the Zoning By-law. These changes slightly reduced the ground floor area of the dwelling from 49.1 sq. m to 48.6 sq. m.

Figure 1: Original Site Plan

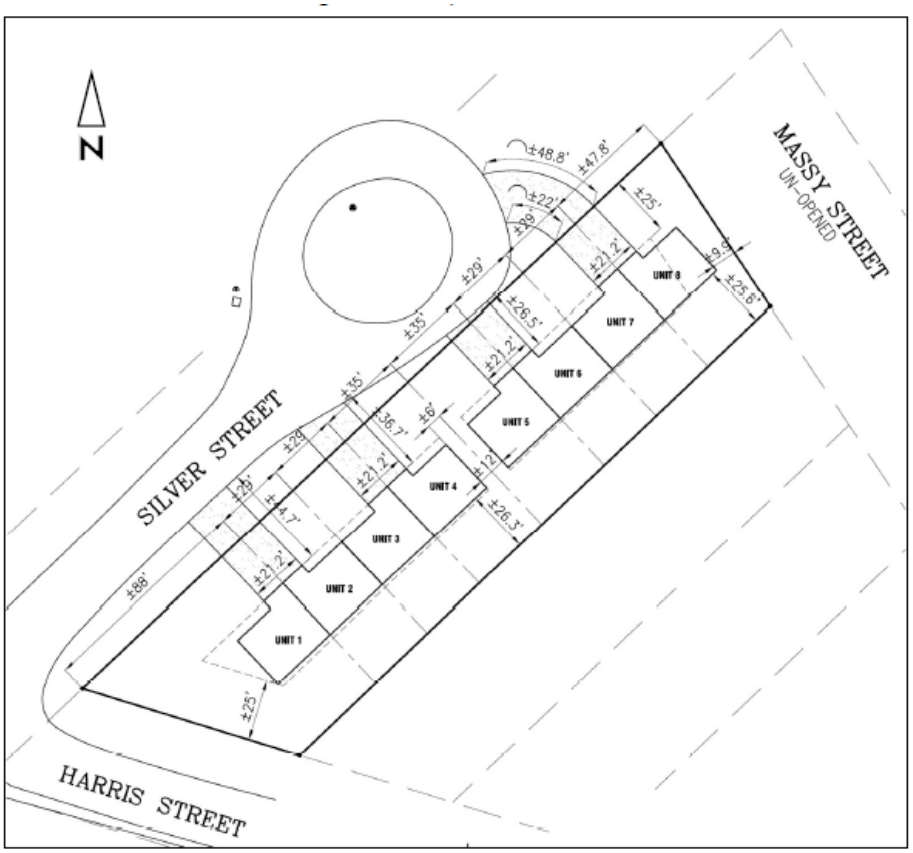


Figure 2: Revised Site Plan, May 1, 2026

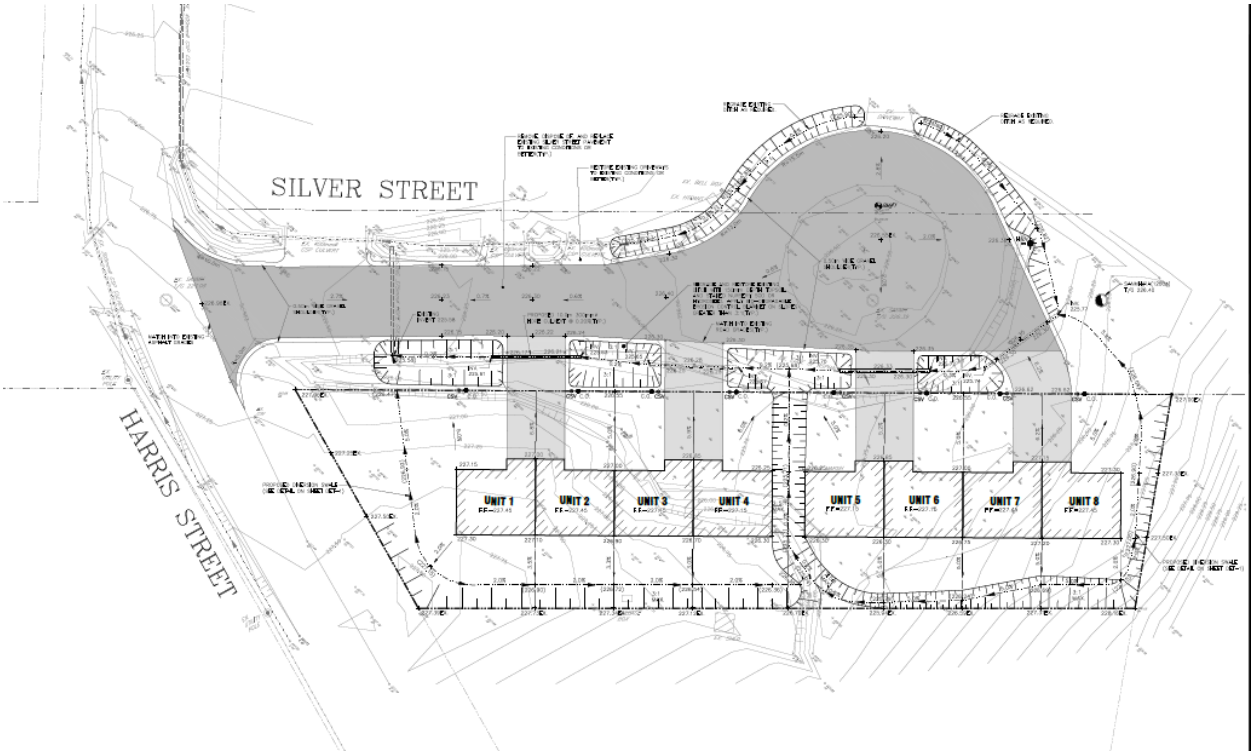


Figure 3 - Original Main Floor Plan

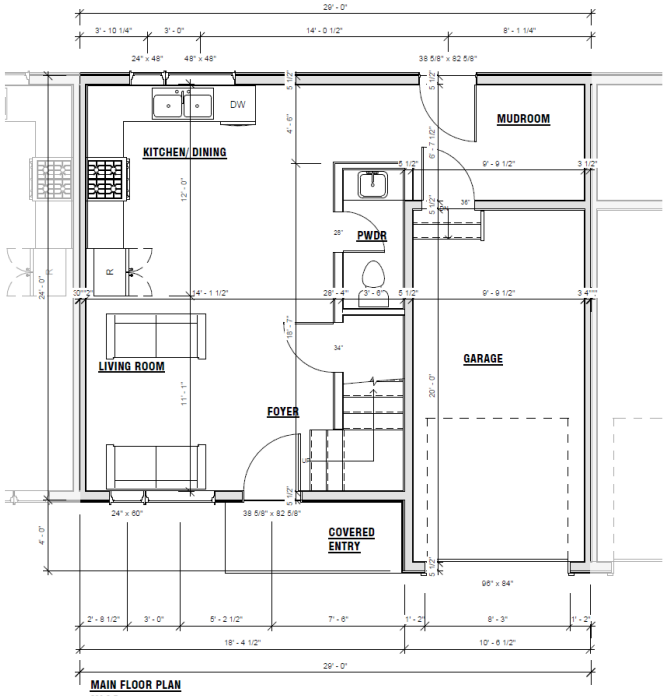
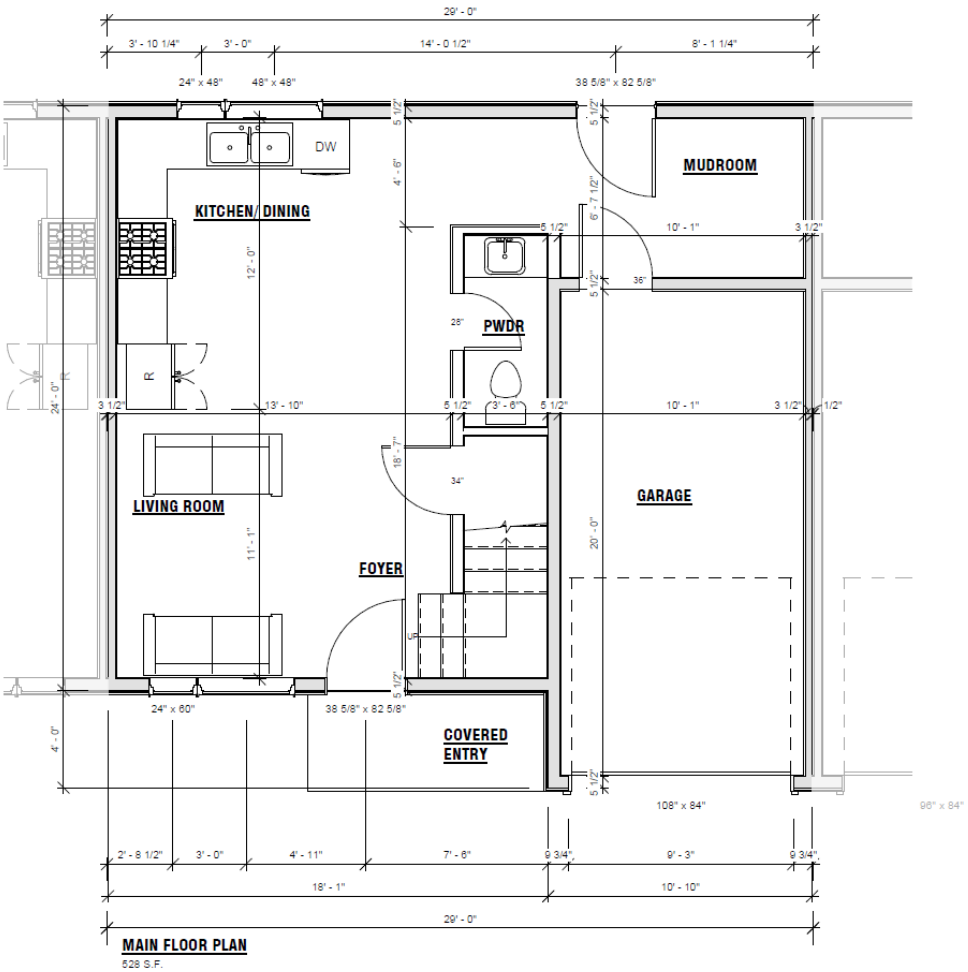


Figure 4: Revised Main Floor Plan



ANALYSIS

Official Plans

The application was reviewed in accordance with the policies in effect when it was deemed complete. At the time that the subject application was deemed complete, parts of the Township's 2023 Official Plan were under appeal. Relevant policies were not under appeal and as such staff have only referenced the 2023 Official Plan.

Proposed Rezoning – Residential (R1) – Multiple Residential Medium Density Residential (RM1)

The applicant is proposing to rezone the lands to facilitate the development of eight townhouse dwelling units on full services. The subject lands are located within the

Settlement Area boundaries of Port Carling, within the 'Urban Residential' designation of the Township's 2023 Official Plan, in an area identified as 'Full Service' per Appendix B1 being an area serviced by municipal water, sanitary and sewer facilities.

Staff have no concerns with the requested rezoning, provided a Holding (-H) provision is placed on the lands. In making this determination, key considerations include the following applicable policies and the analysis contained below:

Planning Act

The Planning Act states that all decisions made by planning authorities/municipalities "shall be consistent with the policy statements issued" under subsection 3. Policy statements are those contained within the Provincial Planning Statement, 2024 (PPS) document.

PPS

- The PPS is comprised of several policy statements and those that are most applicable to the proposed development are noted below.

- The subject lands are located in a Settlement Area as defined in the Provincial Planning Statement, 2024 (PPS). The PPS contains a number of policies that supports provincial direction to increase the supply and mix of housing options to address the full range of housing affordability needs. Section 2.1 of the PPS incudes policies that encourage municipalities to plan for and provide an appropriate range and mix of housing options and densities and supports the achievement of complete communities by, in part, accommodating a range of housing options. Section 2.2 directs municipalities to permit and facilitate all housing options and all types of residential intensification that efficiently uses land, resources, infrastructure, and public services. Section 2.3 of the PPS directs the majority of growth and development to 'Settlement Areas' where new development varies in densities and land uses, and there are opportunities for intensification and redevelopment.

- Polices of the PPS direct that development and site alteration is only permitted in the flood fringe provided it is carried out in accordance with floodproofing, protection works and access standards.

- The PPS contains policies that provide direction and guidance to development proposed within and adjacent to natural heritage features.

District of Muskoka Official Plan

- The subject lands are located within an 'Urban Serviced Area' of an "Urban Centre" and "Waterfront Area" designation of the District of Muskoka Official Plan "MOP". The MOP contains policies that direct the majority of year round residential development to fully serviced Urban Centres and supports the diversification of

housing options. It also contains policies encouraging the efficient use of land and infrastructure.

- The District of Muskoka provided comments on the subject application, noting that they are not opposed to the development provided the draft zoning by-law includes a "H" Hold provisions related to servicing matters and that appropriate development control measures are in force relative to environmental recommendations and appropriate flood proofing requirements.

Township of Muskoka Lakes Official Plan

- The subject lands are located within the Urban Centre of Port Carling and the 'Urban Residential' Designation of the Township's 2023 Official Plan.

- The Township's 2023 Official Plan, includes several Housing specific objectives, including the specific objective to ensure "that an adequate supply of land and housing choices are available for present and future residents of all ages, abilities, incomes and household sizes and is located in areas near jobs and essential goods and services". Further, the Official Plan encourages year-round residential development to be located in Urban Centres where full services are available. It also encourages the intensification of use of land and provision of attainable housing choices.

- Section I4.1.1 of the 2023 OP states that within the 'Urban Residential' designation, all forms of residential dwellings are permitted, including low, medium and high density residential development.

- Section I4.1.2.2 of the 2023 Official Plan contains specific policies relating to 'Medium Density' development. This section states that, where a medium density residential development is proposed, it shall generally consist of townhouses and low-rise apartments. This form of development is encouraged to locate where direct access to a major public road is available and pedestrian links can be established, in close proximity to public open spaces, and in close proximity to commercial facilities. It is also encouraged to located in close proximity to institutional uses.

- Section I4.1.2.2. d) and e) states that medium density residential development shall not exceed 40 units per gross hectare and no single-structure shall exceed 12 units. Further, medium density residential development may be permitted on shoreline property in close proximity to the Core Commercial areas.

- Section L7.1 of the Township's Official Plan speaks to attainable housing and states, in part, that creative and innovative approaches to the provision of attainable housing may be considered. This includes alternative development standards such as reduced minimum lot frontage requirements, higher permitted

lot coverage, lower minimum landscaped area, reduced parking standards, and others.

- Section L1.7 d) of the 2023 Official Plan goes even further to highlight a number of zone standards that should be reviewed to reduce impediments to attainable housing as part of a future Zoning By-law update. This should include: minimum lot frontage, minimum setbacks from lot lines, maximum coverage, minimum landscaped area, minimum gross floor area and required parking.

Policy Analysis

Based on the above policies, staff conclude the application is consistent with the Provincial Planning Statement and conforms to the policies of the District of Muskoka Official Plan and the Township of Muskoka Lakes's 2023 Official Plan due to the following:

- The development will be located on full municipal services, represents an efficient use of land and will diversify the housing options available in Port Carling.

- While a portion of the subject lands are located within the flood fringe areas of the Indian River, the Functional Servicing Report submitted in support of the proposal indicates that the site will be regraded such that all building finished floors will be set 0.3m above the flood plain elevation. The development is proposed to be slab on grade (i.e. no basements).

- Due to the presence of a small unevaluated wetland on the site, a Scoped Environmental Report was completed and concludes that the removal of the wetland and replacement with diversion swales consisting of native wetland vegetation will allow ecological functions to continue following construction. Provided the recommendations of the SER are incorporated into the development approvals (site plan control), impacts on natural heritage features and functions will be mitigated.

- The proposed development will be located within a short walking distance to two public parks, a community arena, the Township office and library and the core commercial area of Port Carling where an abundance of goods and services are available. It is also located a short distance from Hwy 118.

- The proposed development density of 37 units per hectare is less than the maximum density permitted in the Township's Official Plan (being 40 units per hectare) and has 4 fewer units than the maximum total number of units permitted (being 12).

- A Holding (-H) provision is recommended by staff to ensure that the servicing matters will be fully addressed before the 'hold' could be removed from the zoning by-law. If Committee is considering this approach, a

revision would need to be made to the draft by-law to apply the Holding (-H) provision. The by-law would be revised to stipulate that Council shall not consider lifting the Holding provision until such time as the servicing matters have been addressed by both the Township and District, including:

- A Functional Servicing Report (FSR) has been submitted to the satisfaction of the District Municipality of Muskoka;
- Hydraulic modelling has been completed and the results incorporated into the FSR to the satisfaction of the District Municipality of Muskoka;
- The applicant has entered into an agreement with the District Municipality of Muskoka respecting the provision of municipal water and sewer services and related capacity allocation, including the provision of securities, if necessary;

Staff also note for the purpose of clarity that the lands will be subject to site plan control approval. A satisfactory site plan agreement will be required to be entered into and registered on title. The SPC Agreement will ensure the implementation of servicing recommendations, privacy fencing, snow storage, environmental recommendations and floodproofing matters.

Exemption A and B – Exterior Side Yard Setback and Setback from Unopen Road Allowance

Staff have no concerns with the requested exemptions. In making this determination, key considerations include:

- The Township's 2023 Official Plan is generally silent regarding setbacks from a lot line abutting a public street in the Urban Residential designation. However, policy L6.3 states that no development or redevelopment of lands shall be in close proximity to a Township Road that is scheduled for improvement until this improvement has been sufficiently designed to determine the land requirement for such. Operational Services provided comments indicating a preference that the required setback to the unopened road allowance be maintained. However, in this case, the unopened road allowance is not planned for improvements (or opening).

- Township's Comprehensive Zoning By-law establishes 7 m (25 feet) as the required setback from a lot line abutting an unopened road allowance. This setback is established, in part, to prevent incompatibility conflicts between residential and public uses. Generally, development should be sufficiently set back to protect the long-term function of an ORA. In this case, Unit 8 is proposed to be located 3 m (9.9 ft) to Massy Street (Unopened Road allowance). It is staff's opinion that 3 m setback will provide sufficient space to prevent incompatibility conflicts with a future road if one is ever opened. It is also noted that fencing around the perimeter of the development is recommended by staff to be incorporated into the site plan

approval process and will further assist to prevent incompatibility conflicts with a future road.

- It is also noted that the proposed exterior side yard setback for Unit 8 will also meet the minimum required setback of an exposed end or side wall of 3 m (10 ft) per Section 5.1.4.3 of the Township's Zoning By-law.

Exemption C – Minimum Lot Frontage

Due to the reconfiguration of the Silver Street cul-de-sac as noted in the updated FSR, all of the units will now have the required 7 m frontage on a public road. As such this exemption is no longer required.

Exemption D – Interior Side Yard Setback

Staff have no concerns with the requested exemptions. In making this determination, key considerations include:

- The Township's 2023 Official Plan is generally silent when it comes to requirements for interior side yard setbacks. Section 5.1.3 of the Township's Zoning By-law 2014-14 requires an interior side yard setback of 1.8 m. However, attached units, such as those proposed within this development, require a 0 m setback reflecting that the units are 'attached'. This exemption is technical in nature and as such staff have no concerns with it. It is noted that the building code will ensure that the units are constructed with appropriate fire separations.
- This provision will only apply to the setback between common walls shared by the units.
- The Zoning By-law is required to be updated to allow for an exemption to the required side yard setback for attached units where they share a common wall.

Exemption E – Density

Staff have no concerns with the requested exemptions. In making this determination, key considerations include:

- Section I4.1.2.2 d) and e) of the 2023 Official Plan states that medium density residential development shall not exceed 40 units per gross hectare and the maximum number of units is 12. This is a new policy relative to the 2013 OP and the Township's Zoning By-law has not yet been updated to reflect this direction. Rather, the Township's Zoning By-law currently permits a maximum density of 30 dwelling units per ha in the Residential Medium Density (RM1) zone. The RM1 density regulation in the Zoning By-law will be required to be updated to permit 40 units per ha per the Official Plan.
- The development proposal represents 37 dwelling units per ha given the size of the property. It is noted that the 30 dwelling units per ha permitted within the RM1 zone would allow the development of 7 units. The proposed density of 8 units is

less then the density permitted in the Official Plan (less then the permitted 40 units per ha and less then 12 units total).

- It is noted that given the area and frontage of the lands, the lands could potentially be severed into four lots each containing a single-detached dwelling. Per Bill 23, which amended the Planning Act permissions related to Additional Dwelling Units, each single-detached dwelling could contain, as-a-right, up to three units. This would result in a total of 12 units on the subject lands, representing a more intense use of the lands then the current proposal.

Exemption F – Minimum Ground Floor Area of a Dwelling Unit

Staff have no concerns with the requested exemption. In making this determination, key considerations include:

- The Township's Official Plan provides limited direction with respect to the minimum ground floor area of dwellings. Section L7.7 states that the minimum size of a dwelling unit shall be as set out in the Ontario Building Code and sets a maximum gross floor area for dwellings (being 7,491 sq ft).
- Section 5.1.4.3 of the Township's Zoning By-law requires a minimum ground floor area of 65 sq m (700 sq ft) for townhouse dwelling types. It is noted that the definition of ground floor notes that it does not include garage parking areas. In this case the proposal originally proposed 49.1 sq m (528 sq ft) of ground floor area and 19.1 sq m (205 sq ft) for an attached garage, resulting in the two-storey units having a total gross floor area of 117.4 sq m (1,263 sq ft). However, the small adjustment to widen the size of the garage will result in a ground floor area of 48.6 sq m (523.13 sq ft). This adjustment is considered minor by staff and it is recommended that the zoning by-law be adjusted to reflect this updated ground floor area.
- The Ontario Building Code includes minimum requirements for the gross area of various components of a dwelling unit (i.e. requires a minimum area for bedroom areas, living room areas, etc.), not ground floor area. The Township's Chief Building Official has confirmed that the gross areas of all of the components of the proposed townhouse units exceed the minimum requirement of the Ontario Building Code.
- Section L7.1 c) of the Township's Official Plan states, in part, that creative and innovative approaches to the provision of attainable housing may be considered, including alternative development standards for minimum gross floor area standards, and well as other provisions.
- The floor areas for the townhouse units show the ground floor as including a covered porch area, kitchen/dining area, living room, powder room and mudroom attached to the garage. The mudroom door leads directly to the rear yard. The second floor contains three bedrooms and washroom and laundry room. The layout appears to provide for all the common functions in a dwelling of this type. Staff have no concerns with the size of ground floor area of the townhouse unit.

- As noted in the report above, diversifying housing options, particularly attainable or affordable housing options in the Township is a priority. As dwelling price is largely a function of lot and dwelling size, providing a dwelling type that is more modest in size on a modest sized lot will likely translate to a more affordable housing purchase price. Affordability is often a key factor for those looking for a way to stay in, or move to, a community. A complete community is one that provides housing options for people through-out their life stages and for a variety of financial means.
- Recently, Meridan Consulting and staff recommended (see Report DSES-2026-020 from May 14, 2026) that the Zoning By-law be updated to delete the provision that requires a minimum ground floor area of 65 sq m (700 sq ft) for townhouses. This recommendation was approved by Planning Committee.

Exemption G – Parking

- Section L7.1 of the Township's Official Plan speaks to attainable housing. The submitted Planning Justification Report (detailed in the previous staff report) notes that the proposal supports broader housing objectives related to increasing housing supply, providing a diversity of unit sizes, and enhancing access to more affordable housing options. As noted earlier, Township's Official Plan supports creative and innovative approaches to the provision of attainable housing, including alternative development standards such as reduced minimum lot frontage requirements, reduced parking standards, and others. Further, Section L1.7 d) of the 2023 Official Plan highlights parking as a standard to be considered when updating the Zoning By-law to support the development of attainable housing.
- Section I2.3.2.3 of the Township's Official Plan contains policies that encourage surface parking between the front of the building and public street to be minimized where possible.
- The Township's Zoning By-law requires 2 parking spaces per dwelling unit for townhouse dwelling types (Section 3.28 a) and that each space shall be unobstructed (Section 3.23 e) i)).
- Staff note that updated floor plans have been submitted to modify the garage dimensions such that the garage will provide the minimum parking dimension standards, being 3 m by 6.1 m.
- It is noted that recent changes to Planning Act regulations specifically permit tandem parking arrangements for Additional Dwelling Units.
- Staff are of the opinion that the proposed tandem parking arrangement is appropriate for this specific townhouse dwelling proposal and will satisfy the two parking spaces per townhouse unit required of the Zoning By-law.
- It is noted that while it may be possible to create an additional parking space in the front yard, this will create more hard surface area and less landscaping in the front yard contrary to the direction in the Official Plan noted above.
- Recently, Meridan Consulting recommended (see Report DSES-2026-020 from May 14, 2026) that the Zoning By-law be updated to permit tandem parking spaces in certain circumstances. Staff intend to include in the updated Zoning By-law

parking provisions that would allow tandem parking for a variety of dwelling types, which staff anticipate would include townhouse dwelling types.

Public Comments

As noted in the original staff report, a number of written comments and a local petition with 53 signatures was submitted in opposition to the proposal. In addition, staff met with a group of area residents to discuss their concerns with the application after the public meeting. Staff have compiled the comments based on all of the above and provide a response to each.

Comment: It is not appropriate for a development application to come forward to permit something that is contrary to the Township's Zoning By-law. Permitting this would provide a precedent and may encourage others to come forward to make similar zone change applications in residential neighbourhoods.

> Response: Neither staff nor Council can prohibit someone from making a planning application. Staff are responsible for analysing the application relative to the land use policy directions approved by Council as set out in the Township's Official Plan and providing a recommendation for Committee / Council to consider. The Township's Zoning By-law is not yet aligned with new land use policy direction found in the 2023 Official Plan. However, it is in the process of being updated. In this case, staff find the application conforms to the land use policy direction in the 2023 Official Plan and the requested zone change with its zone exemptions are appropriate.

Comment: There will not be enough parking provided on site. How will on-street parking be managed? The garage does not meet the minimum parking space requirements.

> Response: The garage layout has been enlarged to accommodate a parking space that meets the minimum dimensions required in the Zoning By-law. As such, the proposal will accommodate two parking spaces per dwelling unit as required by the Zoning By-law. Currently, on-street parking is permitted along both Harris Street and Silver Street. However, staff will monitor on-street parking usage in the area. If deemed necessary, staff can consider updating the parking by-law to limit on-street parking in certain locations. This will enable by-law enforcement actions to be undertaken in the future if necessary.

Comment: Townhouse dwellings are not compatible with the character of the area and do not reflect the intended use of the land given its current zoning.

> Response: From a land use planning perspective, the term "compatible" does not require the development proposal to be identical to existing development. Rather, compatibility assess whether the intended land use (residential) is able to coexist harmoniously with other uses in the area. Compatibility considers factors such as

height, scale, density, traffic impact etc. In this case, the proposal is in keeping with the height, lot frontage, lot area, coverage, front yard setback, rear yard setback and landscaping provisions of the RM1 zone. It represents a less intense form of development that could be permitted as-a-right (if 4 units developed each containing three units). Also, the proposed development will not introduce a traffic volume that exceeds the design capacity of the local road. The proposal will provide for the same land use as in the immediate vicinity, being residential. The 2023 Official Plan states that low, medium and high density development are appropriate land uses in lands on full services and designated Urban Residential (such as the subject lands).

Comment: The proposal will impact privacy.

Response: The proposal includes two storey dwellings which will not exceed the maximum permitted height set out in the Zoning By-law, being 10.7 m (35 ft). This is the same for all community residential zone categories. The subject lands abut only one private residential property located to its side yard. Functionally, the rear yards of each townhouse unit will back onto the abutting property and the proposal meets the minimum required rear yard setbacks. However, staff will incorporate the requirement for a privacy fence to be constructed between the rear yards and the abutting private property as part of site plan control approval process to alleviate privacy and compatibility concerns. The fencing will be required to be constructed in a manner that will not interfere with stormwater flows into the property from area lands.

Comment: The proposal will result in flooding onto adjacent properties.

Response: A stormwater management report was required to support the development application and considers the exterior drainage area that currently flows onto the site. The stormwater management plan is required to manage these flows into the municipal storm sewer in a way that does not impact other private properties. The stormwater management report has confirmed that there will be no increase in runoff directed to adjacent private properties. Also, there is no downstream flood impact concern associated with this development on the Indian River.

Comment: The proposal did not include a Heritage Impact Assessment and does not consider its impact on the preservation of heritage features, maintain natural landscapes or protect historic or natural values of the Township.

Response: A Heritage Impact Assessment is required for any proposal that has the potential to impact a ‘cultural heritage resource’ to demonstrate that its heritage attributes are not adversely affected. The Township’s 2023 Official Plan defines ‘cultural heritage landscapes’ as a “defined geographic area of heritage significance that has been modified by human activities and is valued by a community. It involves a grouping(s) of individual heritage features such as structures, spaces and archaeological sites and natural elements, which together

form a significant type of heritage form, distinctive from its constituent elements or part". The residential area of Harris Street and Silver Street does not, in the opinion of staff, meet the definition of a 'cultural heritage landscape" as it does not contain a grouping of heritage designated properties or structures, archaeological sites or distinctive natural elements. As such, a Heritage Impact Assessment is not required.

It is noted that, while the proposal is close to the waterfront, there is nothing in the 2023 Official Plan that prohibits this form of development in this area of Port Carling. Finally, the Scoped Environmental Report reviewed the natural heritage features of the property noting that the vegetative communities are typical of the Muskoka / Parry Sound region. While the development will result in a loss of trees and wetland area, the functionality of the wetland feature will continue after development with its replacement with diversion swales consisting of native wetland vegetation.

Comment: The proposal will have a negative impact on traffic and road network capacity. Snow storage is a concern given the number of units and driveways.

Response: Both Harris Street and Silver Street are defined as 'local' roads. A local road is designed for two way traffic, generally for a volume ranging between 500-1000 vehicle trips per day. Operational Services staff are of the opinion that the number of vehicle trips per day that is anticipated to be generated from 8 townhouse dwellings will not result in the design capacity of the road being exceeded. As such, staff do not anticipate the development proposal will have negative impacts on the traffic or road network capacity.

With respect to snow storage, staff note that snow storage areas will be required to be accommodated on the site plan as part of the site plan approval process.

Finally, it is noted that after the agenda for the original staff report was posted, three additional letters were received, including a petition signed by five people, regarding the subject application, all noting support for the proposal.

General Analysis

Relevant planning policies are included in Appendix A1 to this report.

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APPENDIX

A1: Planning Policy

Provincial Policy Statement
The Provincial Planning Statement, 2024 (PPS) provides policy direction on matters of provincial interest related to land use planning and development. The subject lands are identified as a Settlement Area per the PPS. Staff consider the application consistent with the PPS subject to the identified revisions in this report.
District of Muskoka Official Plan
The subject lands are designated Urban Centres and Waterfront in the District of Muskoka Official Plan. The District Municipality of Muskoka has delegated consent granting authority under the Planning Act to the Township, is a commenting agency in regard to Provincial and District interests, and the approval authority for Official Plan Amendments. Comments from the District do not oppose the application but recommend that a holding provision be imposed as part of any approval.
Township of Muskoka Lakes Official Plan (Approved November 20, 2023)
The Township's 2023 Official Plan identifies the subject property as an Urban Centre and within the "Urban Residential" designation. It is the opinion of staff that the application conforms to the Official Plan subject to the aforementioned recommendations.

TOWNHOUSE DEVELOPMENT
SILVER STREET – PORT CARLING
FUNCTIONAL SERVICING & STORMWATER MANAGEMENT REPORT

Prepared by:

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May 1st, 2026
24-11837M – Rev. 1

MUSKOKA | BARRIE

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1.0 INTRODUCTION

1.1 Background

The owner is proposing to construct 2 blocks of townhouses, totalling 8 units, with individual paved driveways and landscaped areas. The site is located east of the intersection of Silver Street with Harris Street in Port Carling. The subject property is legally described as Part of Lot 31, Concession 3, in the Geographic Township of Medora, Township of Muskoka Lakes, District Municipality of Muskoka. The property is bounded by Silver Street to the north, existing residential development to the south, undeveloped woodlot to the east, and Harris Street to the west (see Figure 1). A copy of the site plan is included in Appendix A.

1.2 Purpose and Scope

Pinestone Engineering Ltd (PEL) has been retained by the developer to prepare a functional servicing & stormwater management report in support of a Zoning Bylaw Amendment (ZBA) and Site Plan (SP) application. The purpose of this report is to describe the existing servicing infrastructure in the vicinity of the site, and provide recommendations for the provision of sanitary drainage, water distribution, and stormwater management in accordance with the Township of Muskoka Lakes, the District of Muskoka (DOM), and the Ministry of the Environment, Conservation, and Parks (MECP).

2.0 REFERENCE REPORTS

The following reports and studies have been used for reference in the preparation of this function servicing & stormwater management report:

i) *Ministry of the Environment and Energy's Storm Water Management Planning and Design Manual, March 2003.*

ii) *Engineering Design Criteria and Standards Manual, prepared by The District Municipality of Muskoka and Area Municipalities, July 2024.*

iii) *Sediment Control Planning Central Region Group, prepared by the Ministry of Natural Resources.*

iv) *Drainage Management Manual, prepared by the Ministry of Transportation, 1997.*



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SILVER STREET TOWNHOMES
PORT CARLING

LOCATION PLAN

DATE:	SCALE:	PROJECT No.	FIGURE No.
MAY 2026	N.T.S.	24-11837M	FIGURE 1

3.0 EXISTING CONDITIONS

3.1 General

The property is approximately 0.216 ha in size and consists of forested lands, and a shallow marsh. The property is located within the Township of Muskoka Lakes' urban servicing boundary and existing services are readily available for connection beneath Silver Street.

3.2 Topography and Drainage Conditions

The topography throughout the site is moderate, and generally slopes from east to west at a grade of approximately 8.0% to a shallow marsh and the municipal ditch adjacent to Silver Street. Elevations range from 228.16m ASL at the eastern corner of the property to 225.71m ASL at the shallow marsh central to the property.

Runoff generated within the site boundary, and external drainage entering the property from the adjacent residential lands to the east, flows in the form of overland sheet flow to the existing municipal ditch along Silver Street. Ditch drainage is conveyed south-westerly to Harris Street which conveys flows south-westerly to the Indian River.

3.3 Site Geology

Based on our site reconnaissance and review of the topographic survey and Quaternary Geology of the Lake Joseph – Sans Souci area published by the Ministry of Northern Development and Mines, the geology in the area of the lot is described as:

Glaciolacustrine Deposits: sand, silt, clay, minor gravel

Based on our review of the soil descriptions outlined in the MTO Drainage Manual on Chart 1.08, we have classified the site material as a Type C under the Soil Conservation Service, hydrologic soil group.

A copy of the soils mapping, and Chart 1.08 from the MTO Drainage Manual, is included in Appendix B.

4.0 PROPOSED DEVELOPMENT

The owner is proposing to construct 2 blocks of townhouses, totalling 8 units, with individual paved driveways and landscaped areas. The subject development is privately owned, and all servicing works within the property will be installed per the Ontario Building Code. Access to each unit will be provided off Silver Street.

Existing drainage patterns will generally be maintained in the post-development condition. Runoff generated from the building rooftops, driveways, and landscape areas will continue to flow to the

Silver Street municipal ditch like pre-development conditions. Diversion swales are proposed along the eastern and southern property limits to convey rear-yard and side-yard drainage to the existing municipal ditch. External drainage generated from the residential development to the east will be safely conveyed through the site by a new ditch extending from Silver Street between Units 4 & 5 to the eastern property limit. The Silver Street municipal ditch will be regraded to accommodate new driveway entrance culverts for the proposed development.

The proposed development is located within the Township of Muskoka Lake's urban servicing boundary. Water and sanitary servicing is available for connection within the Silver Street right-of-way (ROW). A watermain and sanitary sewer extension is required up Silver Street to service the proposed development. A servicing agreement with the District of Muskoka is required to secure the necessary connection permits prior to construction.

5.0 SANITARY SERVICING

5.1 Existing Infrastructure

There is an existing 200mm dia. sanitary sewer running beneath the centerline of Silver Street. The sewer flows westerly down Harris Street and crosses beneath the Indian River before being pumped up to the Port Carling Wastewater Treatment Plant (WWTP).

5.2 Proposed Servicing Strategy

Contributing sanitary flows from the proposed development were calculated using the following District of Muskoka design criteria as follows:

- A residential average sewage flow of 450 litres/capita/day.
- A residential population density of 3.0 persons per unit for townhouse units.
- An extraneous flow rate of 0.28 litres/sec/ha.
- A peaking factor based on Harmon's equation.

The proposed development concept includes 8 townhouse units with a population of 24. Incorporating extraneous flows, the peak sewage flow generated by the proposed development is calculated to be 0.61L/sec. A sanitary sewer design sheet is provided in Appendix C.

The design flow calculated above is provided for GHD and the District of Muskoka to conduct a wastewater collection system model to determine whether the existing sanitary sewer system between the subject property and the Port Carling WWTP has the capacity to receive additional sewage flows generated from the proposed development.

5.3 Proposed Sanitary Servicing

A new 25.6m 200mm dia. sanitary mainline extension is proposed up Silver Street to service the development. Each townhouse unit will be serviced by a 125mm dia. lateral

off the 200mm dia. sanitary main. The proposed gravity connection elevation to the EXSAMMH is approximately 223.34m ASL. The proposed finished floor elevation of the lowest townhouse block is 227.15m ASL or 3.81m above the sanitary discharge point at the EXSAMMH, therefore, gravity sanitary servicing can be achieved. A servicing plan illustrating the proposed sanitary servicing strategy is included in Appendix E.

6.0 WATER SERVICING

6.1 Existing Infrastructure

A 150mm diameter PVC class watermain currently exists beneath the northern boulevard of Silver Street that distributes water supply from the Ferndale Water Treatment Plant (WTP). A municipal hydrant is located at the center of the existing cul-de-sac on Silver Street, adjacent to the subject property.

6.2 Proposed Water Demands

Based on the District of Muskoka's Engineering Design Criteria and Standards Manual and the MECP's Design Guidelines for Water Distribution Systems, the proposed water servicing must adhere to the following criteria:

- Maximum system pressure of 690 kPa (100 psi) during normal conditions (average day to peak hour flows).
- Minimum system pressure of 275 kPa (40 psi) during normal conditions (average day to peak hour flows).
- Minimum system pressure of 138 kPa (20 psi) during max day plus fire flow conditions.
- Max day factor of 2.50 and peak hour factor of 3.75 based on MECP Guidelines Table 3-1 in the Design Guidelines for Drinking Water Systems, 2008.
- Residential water demand of 450 L/cap/day.

Based on the above conditions, Table 1 illustrates the proposed domestic demands for the development:

Table 1
Domestic Water Demand

Population	Per Capita Flow (L/day)	Peaking Factors (Based on MECP Guidelines)		Flows (L/sec)		
		Peak Hour	Maximum Day	Average Day	Peak Hour	Maximum Day
24	450	3.75	2.50	0.13	0.47	0.31

Fire demands for the proposed development were estimated in accordance with the 2020 Fire Underwriters Survey (FUS) as follows:

$$RFF = 220C(A)^{0.5}$$

Where,

RFF = the required fire flow in litres per minute.
C = coefficient related to the type of construction.
A = total effective floor area, excluding basements (m^2)

Table 2
Water Requirements for Fire Fighting

Total Area (m^2)	Construction Coefficient "C"	Base Required Fire Flow (RFF) (L/min)	Occupancy and Contents Adjustment Factor	Automatic Sprinkler Protection Credit	Exposure Adjustment Charge	Design Required Fire Flow (RFF)
114	1.5	4,000	-15% (-600L/min)	---	+30% (+1,020L/min)	4,000L/min (66.7L/sec)

Based on the guidance provided in the FUS and applying the relevant reductions and charges in flow for construction type (Type V), occupancy (Group C), and exposure distances, the estimated required fire flowrate for the development will be 4,000 L/min (66.7L/sec). Detailed FUS calculations are provided in Appendix C.

The above fire flow calculations assume a firewall will be constructed to divide each townhouse unit.

6.3 Proposed Servicing Strategy

Water supply for the proposed development will be provided by the existing 150mm dia. watermain located within the Silver Street right-of-way. The existing watermain will be extended 17.7m north up Silver Street and terminate with a new municipal hydrant. Each townhouse unit will be serviced by a new 25mm dia. HDPE Series 160 lateral off the 150mm dia. watermain. Depth of bury will be 1.8m minimum and pipe embedment and backfill will be in accordance with OPSD 802.010. A minimum 2.5m horizontal or 0.5m vertical pipe separation will be maintained between sanitary sewers and water services.

The existing municipal hydrant (#305), located in the center of the cul-de-sac on Silver Street, will be removed. The new municipal hydrant located at the end of the cul-de-sac will be utilized for firefighting supply.

Based on the criteria listed above, the maximum day plus fire flowrate and the peak hour flow is 67.01L/sec and 0.47L/sec, respectively. These design flows are provided for GHD and the District of Muskoka to conduct a water distribution system model to determine whether the existing water distribution system between the subject property and the Ferndale WTP has sufficient volume and pressure to supply the proposed development.

A servicing plan illustrating the proposed water servicing strategy is included in Appendix E.

7.0 STORMWATER MANAGEMENT

7.1 Design Criteria

For new developments within the Township of Muskoka Lakes, and the District of Muskoka, both quality and quantity control of post-development storm runoff is required. As well, the Municipality requires development proponents to identify the mitigation measures that will be put in place during construction to address erosion and sediment control.

Based on the District of Muskoka's Engineering Design Criteria and Standards Manual, all new developments must provide an enhanced level of stormwater quality treatment prior to discharging from a site. The design criteria, in accordance with the MECP SWM Planning and Design Manual (MECP,2003), for this site is as follows:

- Peak flow attenuation to pre-development levels for storm events up to and including the 100-year storm event based on Muskoka area IDF parameters. The grading design of the site should ensure that post-development flows from storm events in excess of the 100-year event are safely conveyed from the site.

- Water quality enhancement in accordance with a sensitive receiving outlet (80% removal of total suspended solids) through the use of accepted control techniques such as extended detention storage, enhanced grass swales, level spreaders, infiltration facilities, and best management practices.

- Preparation of a detailed erosion and sediment control and construction mitigation plan to be implemented as part of the construction program.

7.2 Hydrological Model Selection

Hydrological modelling calculations have been prepared for the site. The intent of these calculations was to provide quantitative estimates of runoff rates under both existing and proposed development conditions. These estimates can then be compared to determine the impact of the proposed development on the study area.

The Modified Rational Method was used to estimate peak runoff flowrates during design rainfall events for the site. Derivation of the design storm hyetographs were based on the "Chicago" 4-hour distribution using the intensity – duration – frequency (IDF) data for the District of Muskoka.

7.3 Design Storms

For the purposes of our stormwater management analysis, we have selected the 2-year, 5-year, 10-year, 25-year, 50-year, and 100-year design storms as part of our evaluation.

Rainfall intensity - duration - frequency (IDF) values for the Muskoka area were entered into an equation that expresses the time - intensity relationship for specific frequency, in the form of:

$$i = \frac{a}{(t+b)^c}$$

where: i = *intensity, mm/hr.*
t = *time of concentration, minutes*
a,b,c = *constants developed to fit published IDF curves*

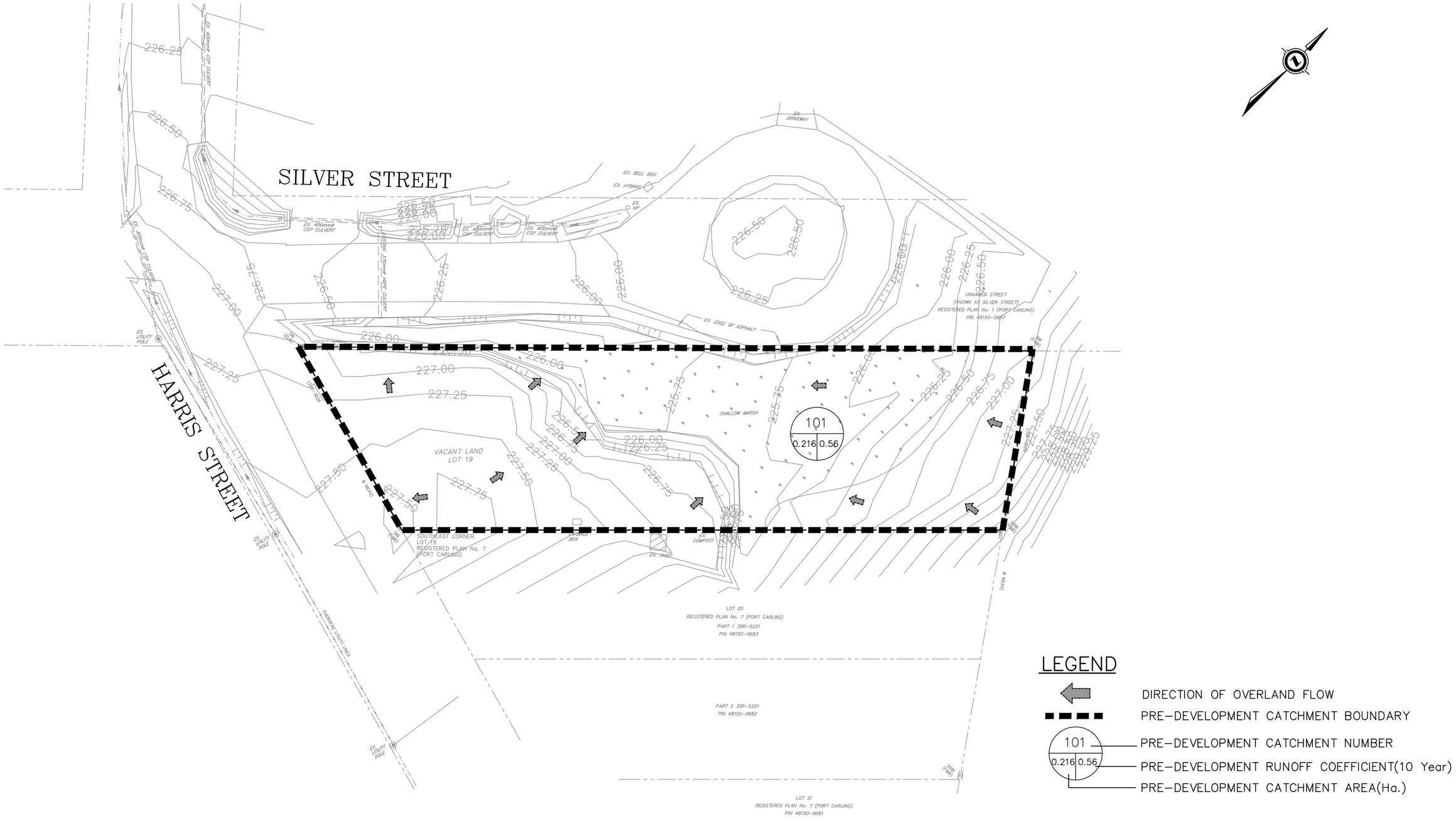
The design storm parameters are outlined in Table 3, below:

Table 3
Design Storm Parameters - Chicago Rainfall Distribution

Rainfall Event	Parameter			Duration (min)
	A	B	C	
2-year	789.5	7.83	0.83	240
5-year	950.0	6.75	0.820	240
10-year	1221.0	7.38	0.843	240
25-year	1452.0	7.30	0.848	240
50-Year	1466.0	6.55	0.832	240
100-year	1499.0	5.81	0.825	240

7.4 Drainage Catchments

One (1) pre-development and one (1) post-development drainage catchment has been delineated for the site in order to estimate the peak runoff rate discharging offsite. The pre-development catchment represents the existing condition of the property, consisting of forested lands and a shallow marsh. The existing marsh connects to the Silver Street municipal ditch. For the purpose of these hydrological calculations, the existing marsh is considered impervious with no infiltration benefit. The post-development catchment represents the proposed development and grading concept for the site broken down into rooftop, pavement, and landscape land uses. The pre-development and post-development catchment parameters are provided in Appendix D and summarized in Table 4. Composition runoff values were increased for the 25 through 100-year storm events per Part 3 of the MTO Drainage Management Manual. The pre-development and post-development catchment boundaries are illustrated on Figures 2-4, below.



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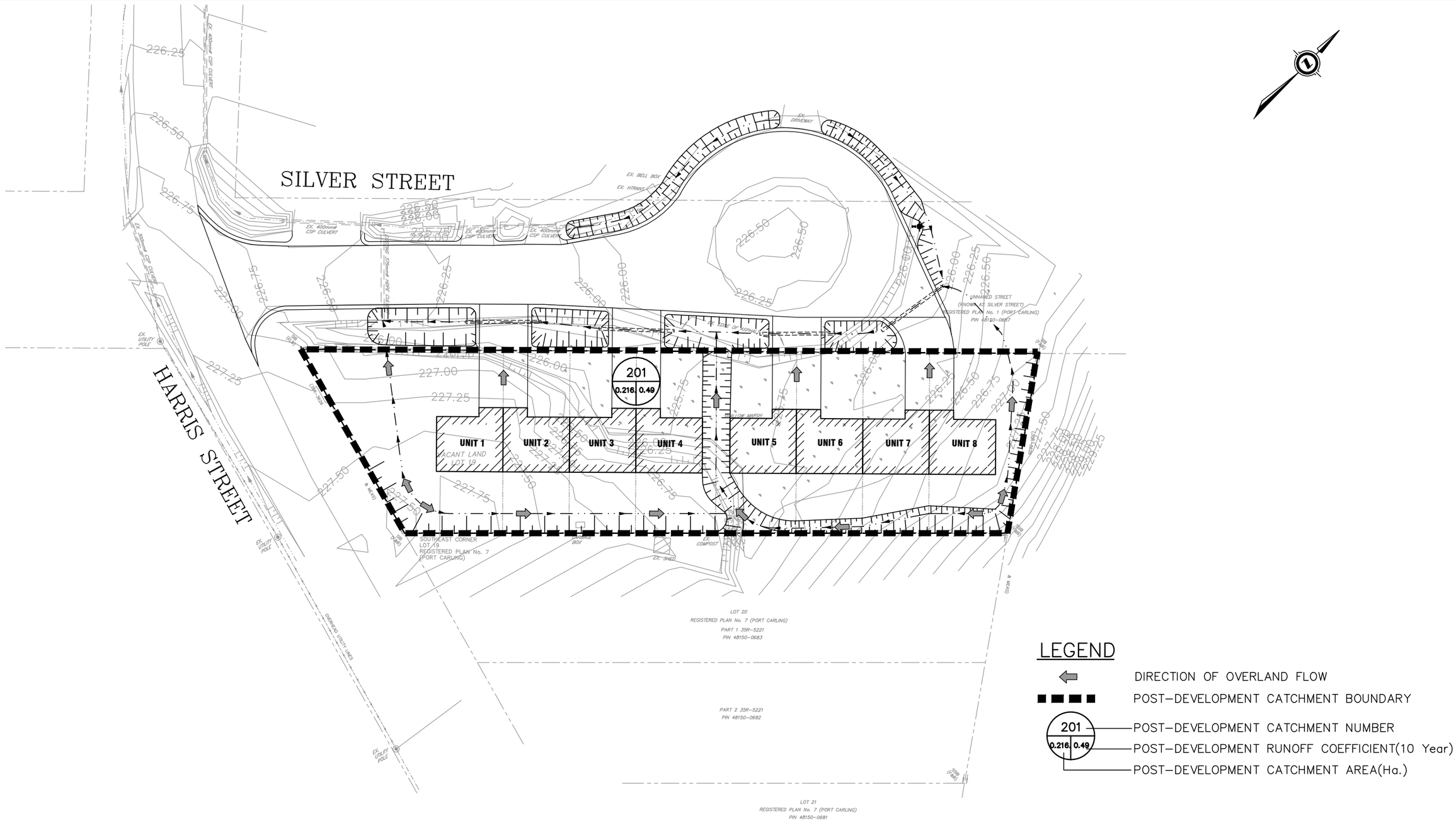
SILVER STREET TOWNHOMES
PORT CARLING

PRE-DEVELOPMENT CATCHMENT PLAN

PROJECT NO. 24-11837M

SCALE: 1:500 | DATE: MAY 2026

FIGURE 2



PEL
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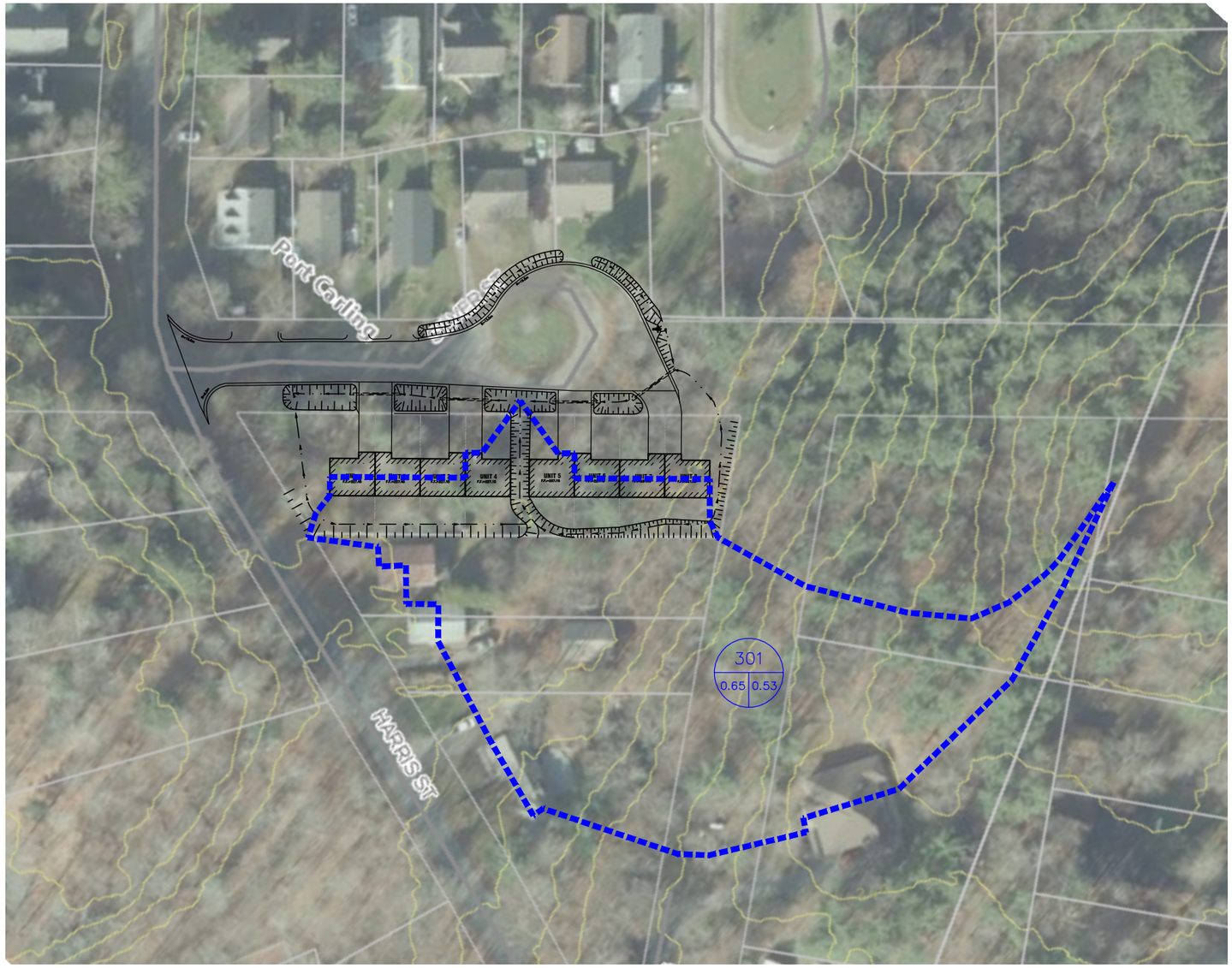
SILVER STREET TOWNHOMES
PORT CARLING

POST DEVELOPMENT CATCHMENT PLAN

PROJECT NO. 24-11837M

SCALE: 1:500 | DATE: MAY 2026

FIGURE 3



LEGEND

- DIRECTION OF OVERLAND FLOW
- EXTERNAL CATCHMENT BOUNDARY
- 301 / 0.65 | 0.53 — EXTERNAL CATCHMENT NUMBER / EXTERNAL RUNOFF COEFFICIENT(10 Year) / EXTERNAL CATCHMENT AREA(Ha.)

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SILVER STREET TOWNHOMES
PORT CARLING

EXTERNAL CATCHMENT PLAN

PROJECT NO. 24-11837M

SCALE: 1:1000 | DATE: MAY 2026

FIGURE 4

Table 4
Sub-catchment Parameters

Catchments	Area (m^2)	Flow Length (m)	Slope (%)	Composite Runoff Coefficient "C"	Time of Concentration (min.)
Pre-Development					
101	2,160	60	4.0	0.56	3.0
Post-Development					
201	2,160	70	1.5	0.49	4.3

Table 5 outlines the calculated pre-development and post-development peak runoff rates (without SWM) during the 2-100-year storm events.

Table 5
Chicago 4-Hour Storm Event Runoff Rates

Catchment ID	Design Storm Events					
	2-Year	**5-Year**	**10-Year**	**25-Year**	**50-Year**	**100-Year**
Pre-Development (m^3/s)						
Catchment 101	0.037	0.049	0.057	0.074	0.090	0.104
Total Pre-Development Peak Runoff Rate	**0.037**	**0.049**	**0.057**	**0.074**	**0.090**	**0.104**
Post-Development (m^3/s)						
Catchment 201	0.029	0.039	0.045	0.059	0.071	0.082
Total Post-Development Peak Runoff Rate	**0.029**	**0.039**	**0.045**	**0.059**	**0.071**	**0.082**

Based on the calculated results using the Modified Rational Method, runoff flows directed to the Silver Street municipal ditch in the post-development condition will be less than the pre-development condition, therefore, no additional quantity control measures are required. This is largely due to replacing the existing marsh with raised lawn area, reducing surface slopes, and increasing flow paths to the existing municipal ditch. Modified Rational Method design calculations are included in Appendix D.

With the implementation of this stormwater management strategy, there will be no increase in runoff directed to adjacent private properties and there is no downstream flood impact concern associated with this development on the Indian River.

7.5 Quality Control Plan

The primary objective of the stormwater management plan for this development is to maintain acceptable water quality within the receiving municipal ditch and ultimate wetland receiver, the Indian River, by maintaining existing site drainage patterns and flowrates.

In order to provide water quality enhancement to an enhanced level of protection (80% TSS removal) for this particular development, we have incorporated the following elements:

- Lot grading using minimal surface slopes to promote infiltration.
- Provision of "soft" landscaping where feasible. Per section 4.3.1 of the TRCA LID SWM Planning and Design Guide, landscaped area and vegetative buffers perform as vegetative filter strips and are credited with a TSS removal benefit of 80%.
- Suitable construction mitigation measures to be utilized during the site development.

It is also relevant to note that out of an overall catchment area of 0.216ha that is 36.8% impervious, 69.2% of the impervious area is rooftop area which is considered clean and does not contribute to TSS accumulation.

The potential treatment alternatives have been evaluated with respect to their applicability for this development and implemented in a manner to achieve the best total suspended solids (TSS) removal possible. Table 6 summarizes the proposed measures and their overall effectiveness.

Table 6
Site TSS Removal Rates

Catchment	Surface	Method	Effective TSS	Area (m²)	% Area of Site	Overall TSS Removal
201	Building Rooftop	Inherent	100%	550	25.5	25.5%
	Landscape Area	Filtration / Evapotranspiration	80%	1,365	63.2	50.6%
	Driveways	Filtration / Evapotranspiration	50%	245	11.3	5.7%
Total				2,160	100.0	81.7%

With the implementation of the proposed quality control plan, the proposed measures in conglomeration will provide an overall long term TSS removal of 81.7% for the site.

7.6 Diversion Swales

In the post development condition, diversion swales will be constructed along the eastern and southern property limits to convey site drainage (landscape and rooftop area) to the Silver Street municipal ditch. As part of development works, the Silver Street ditch will be regraded to accommodate new 300mm dia. driveway entrance culverts. A new ditch will

be constructed between Units 4 & 5 to convey external drainage from the residential development to the east through the site to the Silver Street municipal ditch. The new ditching is sized to convey runoff generated from a 100-year design storm event to the Silver Street ditch. Ditch design sheets are included in Appendix D.

7.7 Indian River Flood Plain

The property is located in the flood plain of the Indian River based on the District of Muskoka's Floodline and LiDAR Mapping 2.0 provided on the Muskoka GeoHub. From the District of Muskoka's Flood Plain Map: Indian River at Port Carling; Map 3, the cross-section at STA#8903 bisects the property and indicates a flood plain elevation of 226.71m ASL. The grading of the site will ensure that all building finished floors are set at a minimum freeboard of 0.3m above the flood plain elevation.

8.0 EROSION AND SEDIMENT CONTROL

8.1 Mitigation Measures

Sedimentation and erosion control measures are required during construction and until such a time that site development has been completed, the driveway areas have been paved, and vegetation established.

The use of various siltation control measures will be implemented to protect the adjacent properties and receiving waterbodies from migrating sediments. These works include but may not be limited to:

- Installation of siltation fencing along the downgradient perimeter of the development area.

- Installation of a construction entrance mud mat to mitigate vehicle tracking offsite.

Prior to carrying out site grading, the siltation barriers and mud mat shall be in place. Any onsite storm sewer works will not be permitted to outlet to the Silver Street ditch until the site has been stabilized.

Other temporary installations of silt fence or other appropriate measures may be required during grading to minimize silt migration from the site. The measures will need to be removed, replaced, and relocated as required during the construction period until the site works have been completed and vegetation established. During construction, all stockpiled material will be placed up-gradient of the siltation controls with additional siltation fencing installation around the stockpiles.

8.2 Monitoring and Maintenance During Construction

It is the responsibility of the contractor and owner to maintain the siltation control devices until suitable grass cover has been established upon completion of construction.

A regular review of the facilities by the contractor should be carried out during the construction period to ensure that the facilities are being properly maintained, and if necessary, replaced. Inspection reports are to be completed monthly and distributed to the owner, contractor, and Township.

If site works are to continue through the winter and spring the engineer should be contacted by the owner to review the measures in place with the contractor on a regular basis to ensure that the facilities are adequate and in good working order.

All reasonable methods to control erosion and sedimentation are to be taken during construction. The contractor should inspect the siltation devices immediately after each rainfall. Damaged devices should be repaired immediately, and additional devices installed if necessary. Silt should be removed from the fencing and related siltation devices when deposits are noticeable.

8.3 Contingency Plan

Should the erosion control measures fail and sediment migrate beyond the limits of the control works, the following tasks are required to be completed:

- The Township of Muskoka Lakes, the District of Muskoka, and the Ministry of the Environment should be notified of the event. The area will be assessed and cleaned up to the satisfaction of the agencies.
- Additional sedimentation facilities be installed in the area of the migration and down gradient to contain the sediment.
- The Ministry of Natural Resources should be contacted in the event that sediment reaches any adjacent water bodies.

9.0 SUMMARY AND CONCLUSIONS

The findings of this report are summarized as follows:

- A new 25.6m 200mm dia. sanitary mainline extension is proposed up Silver Street to service the development. Each townhouse unit will be serviced by a 125mm dia. lateral off the 200mm dia. sanitary main. The design sewage flowrate has been provided for GHD and the District of Muskoka to confirm capacities within their sanitary sewer collection system analysis model.

- Water supply for the proposed development will be provided by the existing 150mm dia. watermain located within the Silver Street right-of-way. The existing watermain will be extended 17.7m north up Silver Street and terminate with a new municipal hydrant. Each townhouse unit will be serviced by a new 25mm dia. HDPE Series 160 lateral off the 150mm dia. watermain. The existing municipal hydrant (#305), located in the center of the cul-de-sac on Silver Street, will be removed. Design flowrates for domestic and firefighting supply have been provided for GHD and the District of Muskoka to confirm pressures and flowrates within their water distribution network analysis model.

- The comparison of pre-development and post-development stormwater flowrates indicate that peak flows will be reduced in the post-development condition during all major storm events, therefore no additional quantity control measures are required.

- Stormwater quality control will be achieved using techniques including the provision of "soft" landscaping where feasible and minimizing surface slopes to promote infiltration.

- Suitable measures can be implemented during construction to protect the adjacent properties from migrating sediments.

It is recommended that:

1) This report and drawings be submitted to the Township of Muskoka Lakes and the District of Muskoka in support of ZBA and SP applications for this development.

2) The construction mitigation measures outlined in this report are utilized as a guideline for construction mitigation management on this site.

All of which is respectfully submitted.

PINESTONE ENGINEERING LTD.



Dwight Hordyk, P.Eng
Project Engineer

APPENDIX A

Site Plan

PART OF LOT 31, CONCESSION 3
GEOGRAPHIC TOWNSHIP OF MEDORA
TOWNSHIP OF MUSKOKA LAKES
DISTRICT MUNICIPALITY OF MUSKOKA

SCALE 1" = 40'

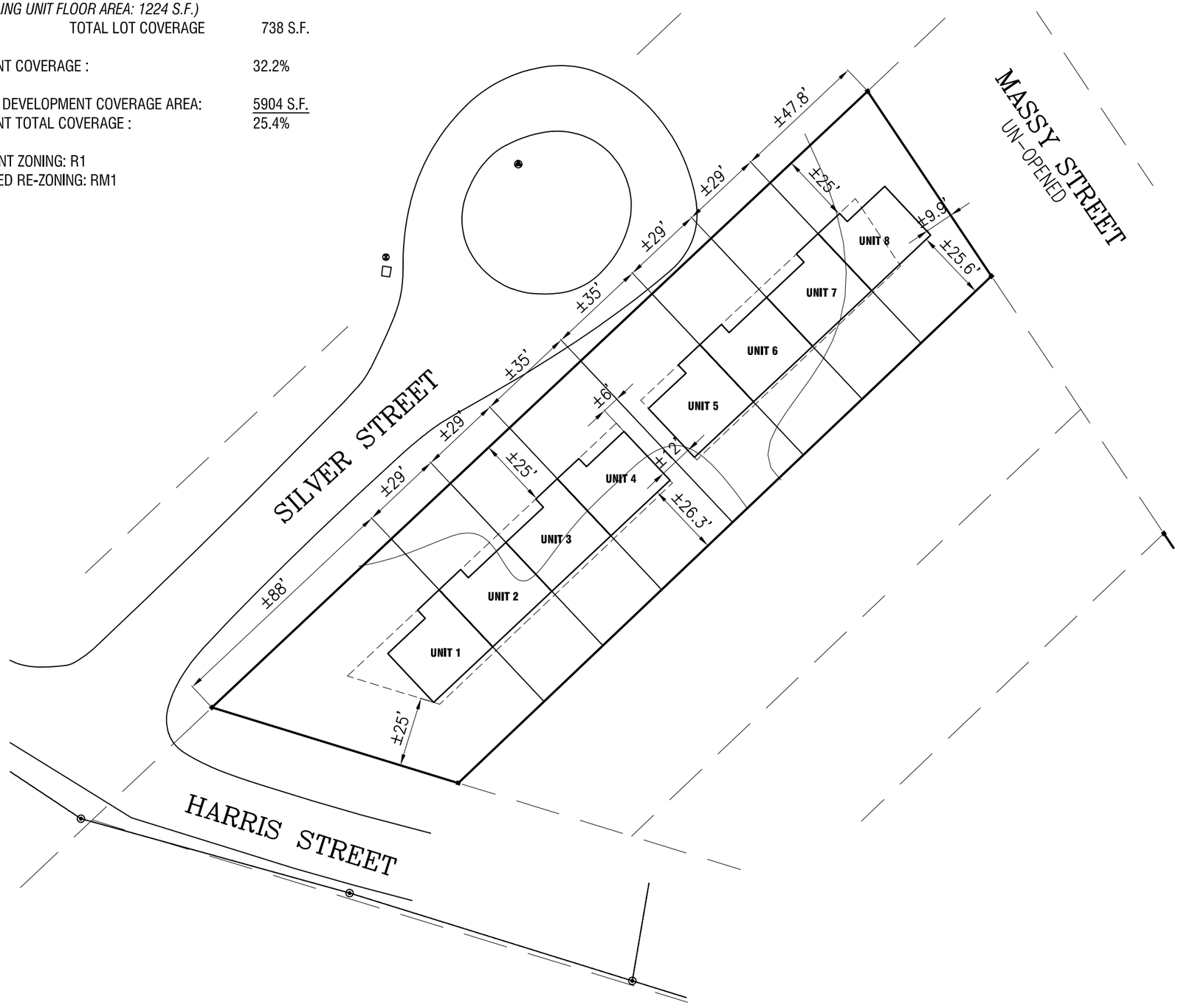
40 30 20 10 0 40 feet 80 120

BROWN PROPERTY
HARRIS STREET
LOT 19 ON PLAN 7
Roll# 4453-050-008-08500

AREA ANALYSIS

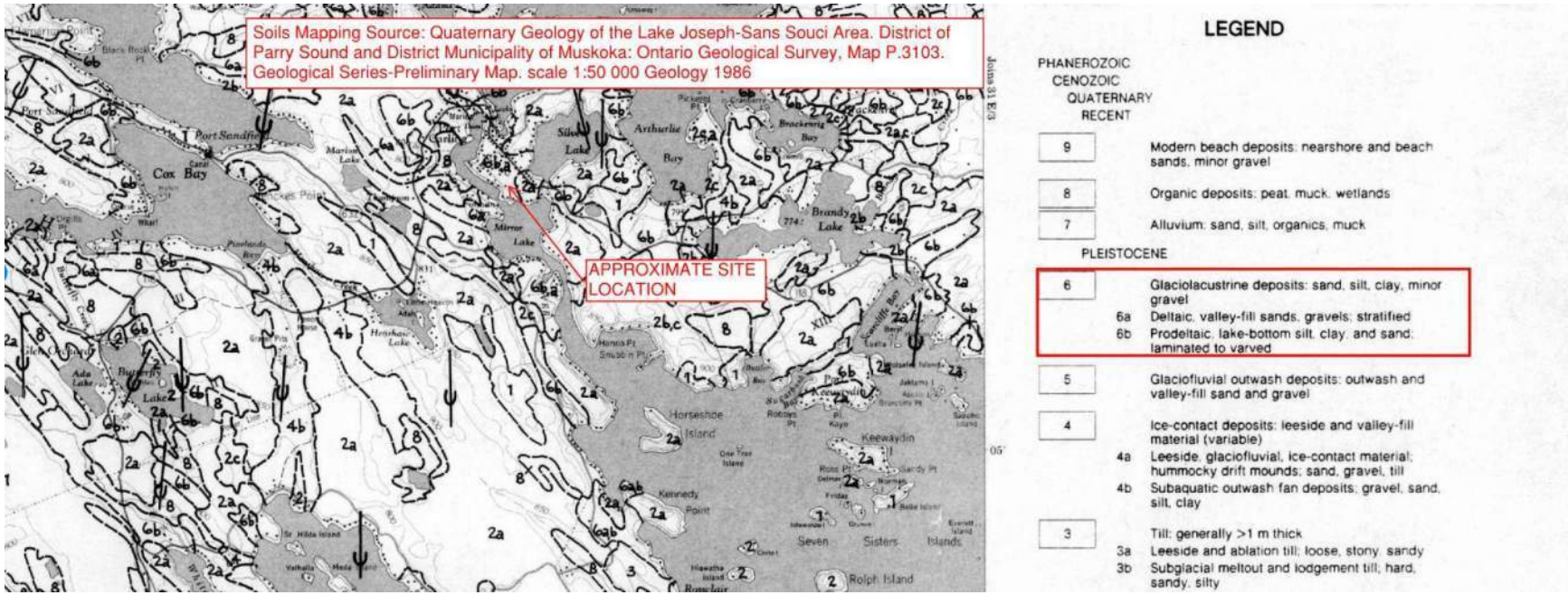
TOTAL SITE AREA:	23206 S.F.	0.53 Ac.
SMALLEST LOT AREA:	2289 S.F.	
PROPOSED GAZEBO COVERAGE AREA:	738 S.F.	
(DWELLING UNIT FLOOR AREA: 1224 S.F.)		
TOTAL LOT COVERAGE	738 S.F.	
PERCENT COVERAGE :	32.2%	
ENTIRE DEVELOPMENT COVERAGE AREA:	5904 S.F.	
PERCENT TOTAL COVERAGE :	25.4%	

CURRENT ZONING: R1
PLANNED RE-ZONING: RM1



APPENDIX B

Soil Analysis


Soils Mapping Source: Quaternary Geology of the Lake Joseph-Sans Souci Area. District of Parry Sound and District Municipality of Muskoka: Ontario Geological Survey, Map P.3103. Geological Series-Preliminary Map. scale 1:50 000 Geology 1986
APPROXIMATE SITE LOCATION
LEGEND
PHANEROZOIC
CENOZOIC
QUATERNARY
RECENT
9 Modern beach deposits: nearshore and beach sands, minor gravel
8 Organic deposits: peat, muck, wetlands
7 Alluvium: sand, silt, organics, muck
PLEISTOCENE
6 Glaciolacustrine deposits: sand, silt, clay, minor gravel
6a Deltaic, valley-fill sands, gravels; stratified
6b Prodeltaic, lake-bottom silt, clay, and sand; laminated to varved
5 Glaciofluvial outwash deposits: outwash and valley-fill sand and gravel
4 Ice-contact deposits: leeside and valley-fill material (variable)
4a Leeside, glaciofluvial, ice-contact material; hummocky drift mounds; sand, gravel, till
4b Subaquatic outwash fan deposits; gravel, sand, silt, clay
3 Till: generally >1 m thick
3a Leeside and ablation till; loose, stony, sandy
3b Subglacial meltout and lodgement till; hard, sandy, silty
Port Sandfield
Cox Bay
Arthurlie Bay
Brandy Lake
Mirror Lake
Horseshoe Island
Keewaydin
Kennedy Point
Seven Sisters Islands
Rolph Island

Design Chart 1.08: Hydrologic Soil Groups (Continued)

- Based on Soil Texture

Sands, Sandy Loams and Gravels	
- overlying sand, gravel or limestone bedrock, very well drained	A
- ditto, imperfectly drained	AB
- shallow, overlying Precambrian bedrock or clay subsoil	B
Medium to Coarse Loams	
- overlying sand, gravel or limestone, well drained	AB
- shallow, overlying Precambrian bedrock or clay subsoil	B
Medium Textured Loams	
- shallow, overlying limestone bedrock	B
- overlying medium textured subsoil	BC
Silt Loams, Some Loams	
- with good internal drainage	BC
- with slow internal drainage and good external drainage	C
Clays, Clay Loams, Silty Clay Loams	
- with good internal drainage	C
- with imperfect or poor external drainage	C
- with slow internal drainage and good external drainage	D

Source: U.S. Department of Agriculture (1972)

APPENDIX C

Sanitary and Water Servicing Information

Industrial and Commercial Water Services

All connections are to be located in accordance with DMM 202.

Planting Blocks

Water services to buffer blocks, parkettes and median plantings shall be no larger than 25 mm diameter and will only be permitted for Area Municipalities. Meters and backflow preventers are required.

Jurisdiction and maintenance agreements, including cost recoveries need to be clearly established when incorporating irrigation systems.

Water Meters

Water meters shall be supplied to the property owner by the District upon receipt of the completed connection permit application and appropriate fee.

3.6 Sanitary Sewer Systems

3.6.1 Sewer Use By-Law

Applicants will be required to abide by the District's Sewer Use By-Law which regulates and controls the discharge of waste into the District's sewer systems. Non-domestic and hauled wastewater dischargers shall contact the District to confirm whether a Waste Discharge Permit is required in accordance with the by-law, prior to discharging waste into the sanitary sewer system.

3.6.2 Design Flows

Design flows shall be in accordance with the Ministry's current version of the Design Guidelines for Sewage Works and the following;

Average Daily Flows

The average daily flow for infrastructure design purposes shall be calculated in accordance with the following table, which is considered to include a margin of safety. Actual usage data may be used for particular industrial uses when available and verifiable.

It is also noted the District has a Water and Sewer Capacity Allocation Strategy as per By-Law 2023-48 as amended for each Area Municipality based upon actual local demand data. This data is to be used by Design Consultants only for the calculation of Equivalent Residential Units (ERU's) when assigning available infrastructure capacity during the development agreement stage. Data in the Water and Sewer Capacity

Allocation Strategy is updated annually and shall be obtained from the District by the Design Consultant.

Average Daily Sanitary Sewage Flows

Development Type	Unit	Avg. Flow Rate	Peaking Factor
Residential	L/cap/day	450	As per Ministry Design Guidelines
Commercial and Institutional	As per Ministry Design Guidelines		
Heavy Industrial	m^3/ha/day	55	As per Ministry Design Guidelines
Light Industrial	m^3/ha/day	35	As per Ministry Design Guidelines

Population Equivalents Based on Land Use

Land use and population equivalents for infrastructure design shall be based on the District or Area Municipality's Official Plan and/or Zoning By-Law applicable to the area.

Residential

Population equivalent densities are to be calculated based on the Official Plan and/or the criteria in the following table:

Residential Population Densities

Density	Unit
Single Family	3.5 persons/lot or 15 persons/hectare
Semi-detached	3.5 persons/lot or 20 persons/hectare
Row dwellings	3.5 persons/lot or 40 persons/hectare
Apartments	240 persons/hectare

Extraneous Flows

Except for unusual circumstances, the infiltration portion of sewage flow for infrastructure design purposes shall be 0.28 L/sec/ha for all types of land use. This factor applies to the gross area of all lands.

Before Initial Acceptance and/or Assumption of new sewer installations, the source of any detected infiltration shall be found and rectified as a construction quality control matter such that infiltration is effectively zero.

Peak Domestic Sewage Flow Calculation

Q = IA + (PqM/86.4), where
I = peak extraneous flow (0.28 L/ha/s)
A = tributary area
P = population, in thousands
Q = average daily per capita domestic flow in L/cap/day
M = peaking factor (Harmon or Babbitt, min 2.0)

Harmon M = 1+ 14/(4+p0.5)
Babbitt M = (5/p0.2)

3.6.3 Gravity Sanitary Sewer Pipe Selection and Design

Minimum Sewer Size and Slopes

Minimum gravity sewer pipe size permitted is 200 mm dia. Minimum slopes shall be 0.5% except for the furthest upstream leg of sewer on any tributary of a system where a minimum grade of 1.00% is required if self-cleansing velocities cannot be achieved under pipe flowing full criteria. Any sewers proposed to be installed at a pipe slope less than 0.5% must be approved by the District prior to the final submission.

Pipe Size

Sewers shall be designed to ensure a flowing full velocity of between 0.6 m/s and 3.0 m/s using the Manning formula, and to flow at a maximum of 80 percent full flow design capacity of the pipe size. The Manning roughness coefficient shall be 0.013. Sanitary sewer design sheets shall indicate both actual and flowing full velocities.

Sewer Pipes and Appurtenances

Sewer pipes and appurtenances shall be in accordance with the current Approved Products List in Appendix C. All sewers with gradients of 4:1 or greater shall be anchored.

SILVER STREET TOWNHOMES

Port Carling, Ontario

Project Number: 24-11837M
Date: April 3, 2025
Design By: DH
Checked By: DH
File: Z:\Project Documents\11837M Harris-Silver St. TH's Port Carling\Detailed Design Work\Design Sheets\11706M Sanitary Sewer Design Sheet.xls

SANITARY SEWER DESIGN SHEET

ENGINEERING AND PUBLIC WORKS

Drainage Area Plan No:

Proposed Sewers
Sewer By Others

Design Parameters

Average Daily Flow:
Residential 0.0052 L/cap/sec (450 L/cap/day)
Residential Population Density*:
Apartment 2.5 pp/unit
Townhouse 3 pp/unit
Single-Family 3.5 pp/unit

Mannings "*n*" 0.0130
Min. Velocity 0.60 m/sec
Max. Velocity 3.0 m/sec

Residential Harmon Peaking Factor (F)
ICI Development Peaking Factor of 2

Residential Areas Infiltration 0.28 L/s/ha

PEL PINESTONE ENGINEERING LTD.

LOCATION				RESIDENTIAL AREAS and POPULATION								SCHOOL, INSTITUTIONAL			COMMERCIAL			INDUSTRIAL				INFILTRATION			DESIGN							CHECKS		
												HECTARES AND FLOW OF EACH ZONING																						
												0.32 *L/s/ha*			0.32 *L/s/ha*			0.40 *L/s/ha*															
STREET	AREA NO.	MANHOLE LOCATION		AREA	SINGLE FAMILY UNITS	TOWNHOUSE UNITS	APARTMENT UNITS	POPUL.	CUMUL POPUL.	HARMON PEAK FACTOR	PEAK RES. FLOW	AREA	CUMUL AREA	PEAK FLOW	AREA	CUMUL AREA	PEAK FLOW	AREA	CUMUL AREA	PEAK FLOW	TOTAL ICI FLOW	AREA	CUMUL AREA	INFIL FLOW	TOTAL VOLUME FLOW	LENGTH	SLOPE	PIPE SIZE	CAPACITY	FULL FLOW VELOCITY	ACTUAL VELOCITY	d/D	Velocity > 0.6 m/s	% Pipe Full
		FROM MH	TO MH	*ha*				*1000s*	*1000s*		*L/sec*	*ha*	*ha*	*L/sec*	*ha*	*ha*	*L/sec*	*ha*	*ha*	*L/sec*	*L/sec*	*ha*	*ha*	*L/sec*	*L/sec*	*m*	*%*	*mm*	*L/sec.*	*m/s*	*m/s*			*%*
SILVER STREET																																	
		SANMH1	EXSANMH	0.075		3.00		0.009	0.009	4.42	0.21											0.075	0.075	0.02	0.23	25.60	2.00	200.00	46.36	1.48	0.38	0.05	Ok	0.5%
		EXSANMH	EXSANMH99	0.141		5.00		0.015	0.024	4.37	0.55											0.141	0.216	0.06	0.61	79.10	0.52	200.00	23.64	0.75	0.32	0.11	Ok	2.6%

* Residential Population Densities Derived from the District of Muskoka's Engineering Design Criteria and Standards Manual (2024)

3.5.2 Watermain

Pipe Sizing

All watermain sizing and pressure requirements shall be in accordance with the Ministry's current Design Guidelines for Drinking Water Systems and shall be confirmed through the District's water system model.

Applicants are required to provide their proposed water system data to the District for entering into the District's water system model. This modeling exercise will be performed by the District at the cost of the Applicant. The results of the modeling exercise are to be incorporated into the water system design for the development.

The minimum pipe size for a watermain is 150 mm diameter unless approved in advance by the District and except for 50 mm diameter looped systems in residential cul-de-sacs in accordance with District Standard Drawings.

Fire Approval

Fire protection approval is required for all industrial, commercial, institutional and high-density residential servicing applications where municipal water is available. Local municipalities must review site plans in accordance with the Ontario Building Code for fire protection purposes.

Where watermains are to be used for fire protection purposes on private property they must satisfy the requirements of the Fire Underwriters Survey in addition to the requirements of the local building department.

Water Demands

Water demands for infrastructure design purposes are to be calculated using the criteria in the Table below, which is considered to include a margin of safety to address unknowns and infrastructure as it ages.

It is also noted the District has a Water and Sewer Capacity Allocation Strategy as per By-Law 2023-48 as amended for each area municipality based upon actual local demand data. This data is to be used by Design Consultants only for the calculation of Equivalent Residential Units (ERU's) when assigning available infrastructure capacity during the development agreement stage. Data in the Water and Sewer Capacity Allocation Strategy is updated annually and shall be obtained from the District by the Design Consultant.

Typical Water Demand Criteria

Development Type	Unit	Avg. Consumption Rate	Max Day Factor	Peak Hour Factor
Residential	L/Cap/day	450	As Per Ministry Guidelines	
Commercial and Institutional	As Per Ministry Guidelines			
Industrial	As Per Ministry Guidelines			

Building Type	Population Density (PPU)	Equivalent Residential Unit (ERU)
Single Family Home	3.5	1
Townhouse	3.0	0.85
Apartment	2.5	0.7

Custom demands for larger volume consumers or those with exceptional peak demands require special considerations regarding flow calculations. Each case will be reviewed on an individual basis.

Undeveloped Areas

When sizing watermains to service currently undeveloped areas the population or development type used to calculate demand shall be based on the Official Plan and Zoning By-Laws for the area being considered. It is the Design Consultant's responsibility to obtain and consider the Official Plans and Zoning By-Laws of the municipality having jurisdiction over the area being serviced. In case of a conflict between the Area Municipality's and District's Official Plans and By-Laws, the Official Plan and By-Law which produces the higher demand shall be used.

Minimum Water Pressure Criteria

Watermain supply systems are to be designed to achieve the following minimum pressures under the noted demand scenario:

Demand Scenario	Minimum Acceptable Pressure Range (PSI)	
	Preferred	Accepted
Maximum Day Demand	50-70	40-100
Maximum Day + Fire	>20	>20
Peak Hour Demand	50-70	40-100
Average Day Demand	50-70	40-100
Min Hour Demand	50-70	40-100

Watermain Locations

In general, watermains shall be located out of the paved roadway and in the boulevard area behind curb (or ditch invert) in accordance with the District and Area Municipality's standard location drawings and must have a minimum horizontal separation of 2.5 m (edge to edge) from sewers or manholes. Under unusual conditions such as prevailing bedrock, severe dewatering conditions, or congested areas, the District will consider closer spacing and alternate locations which comply with Ministry separation criteria and procedures, e.g. Procedure F-6-1.

For partial watermain replacements, extensions or full reconstruction, the Design Consultant shall contact the District and the Area Municipality to establish the feasibility of locating the watermain within the boulevard. All non-standard watermain locations will require individual approval by the District and Area Municipality.

Joint deflection is not permitted. All changes in horizontal or vertical alignment shall be accomplished using manufactured bends.

Watermain Depth

Watermain shall be constructed with a minimum cover of 1.8 m to finished grade. Where cover requirements cannot be satisfied, insulation requirements shall be in accordance with the pertinent OPSD as appropriate. Approval of the reduced cover must be obtained from the

Table 3-1: Peaking Factors

POPULATION	MINIMUM RATE FACTOR (MINIMUM HOUR)	MAXIMUM DAY FACTOR	PEAK RATE FACTOR (PEAK HOUR)
500 - 1 000	0.40	2.75	4.13
1 001 - 2 000	0.45	2.50	3.75
2 001 - 3 000	0.45	2.25	3.38
3 001 - 10 000	0.50	2.00	3.00
10 001 - 25 000	0.60	1.90	2.85
25 001 - 50 000	0.65	1.80	2.70
50 001 - 75 000	0.65	1.75	2.62
75 001 -150 000	0.70	1.65	2.48
greater than 150 000	0.80	1.50	2.25

3.4.3 Commercial and Institutional Water Demands

Institutional and commercial flows should be determined by using historical records, where available. Where no records are available, the values in Table 3.2 should be used. For other commercial and tourist-commercial areas, an allowance of 28 m^3/(ha·d) [3000 USgal/(acre·d)] average flow should be used in the absence of reliable flow data.

When using the above unit demands, maximum day and peak rate factors should be developed. For establishments in operation for only a portion of the day such as schools and shopping plazas, the water usage should also be factored accordingly. For instance, with schools operating for 8 hours per day, the water use rate would be at an average rate of 70 L/(student·day) [19 USgal/(student·day)] x 24/8 or 210 L/student (55 USgal/student) over the 8-hour period of operation. The water use will drop to a residual amount during the remainder of the day. Schools generally do not exhibit large maximum day to average day ratios and a factor of 1.5 will generally cover this variation. For estimation of ***peak demand*** rates, an assessment of the water-using fixtures is generally necessary and a fixture-unit approach should be used.

Fire Flow Calculations (Unit #2) – Fire Underwriters Survey 2020

Silver Street Townhomes, Port Carling

Fire demands for the proposed development were calculated in accordance with the Fire Underwriters Survey (FUS) as follows:

$$\mathbf{RFF = 220C(A)^{0.5}}$$

Where,

RFF = the required fire flow in litres per minute.

C = coefficient related to the type of construction.

A = total floor area of building (excluding basements) calculated as per FUS

Construction Coefficient (C)

C = 1.5 for Type V Wood Frame Construction

Total Effective Area (A):

Residential Units: 114m^2
Total Effective Area: 114m^2

Base Required Fire Flow (RFF)

RFF = 220 * 1.5 * (114) ^ 0.5
RFF = 3,523L/min ~ 4,000L/min

Occupancy and Contents Adjustment Factor

Residential Units (Group C): -15%
RRF Reduction = 4,000L/min * 0.15 = 600L/min
RRF = 4,000L/min – 600L/min = 3,400L/min

Exposure Adjustment Charge

Exposure Charge for Proposed Firewall to the East: (+10%)
Exposure Charge for Proposed Firewall to the West: (+10%)
Exposure Charge for Existing Building to the South (~17.0 m): (+10%)
Total Building Exposure Charge: 30%
RRF Increase = 3,400L/min * 0.3 = 1,020L/min

DESIGN Required Fire Flow (RFF)

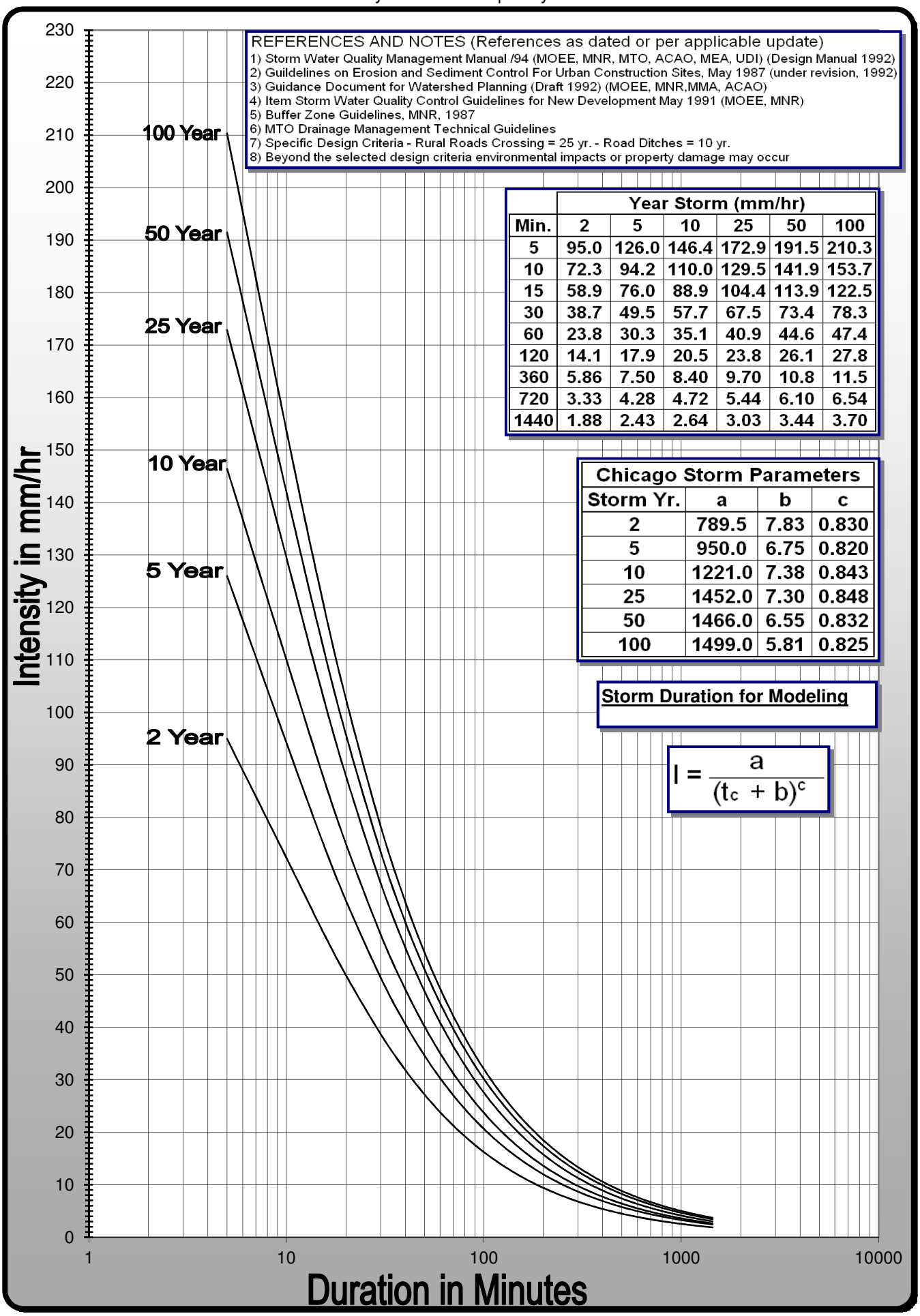
Design RFF (FUS 2020) = 3,400L/min + 1,020L/min
Design RFF (FUS 2020) = 4,420L/min = 4,000L/min = 66.7L/sec

APPENDIX D

Stormwater Management Modelling & Calculations

MUSKOKA RAINFALL DATA

Intensity-Duration-Frequency Values



	Year Storm (mm/hr)					
Min.	2	5	10	25	50	100
5	95.0	126.0	146.4	172.9	191.5	210.3
10	72.3	94.2	110.0	129.5	141.9	153.7
15	58.9	76.0	88.9	104.4	113.9	122.5
30	38.7	49.5	57.7	67.5	73.4	78.3
60	23.8	30.3	35.1	40.9	44.6	47.4
120	14.1	17.9	20.5	23.8	26.1	27.8
360	5.86	7.50	8.40	9.70	10.8	11.5
720	3.33	4.28	4.72	5.44	6.10	6.54
1440	1.88	2.43	2.64	3.03	3.44	3.70

Chicago Storm Parameters			
Storm Yr.	a	b	c
2	789.5	7.83	0.830
5	950.0	6.75	0.820
10	1221.0	7.38	0.843
25	1452.0	7.30	0.848
50	1466.0	6.55	0.832
100	1499.0	5.81	0.825

Storm Duration for Modeling

$$I = \frac{a}{(t_c + b)^c}$$

Updated: Jan. 24, 2006

Design Chart 1.07: Runoff Coefficients

- Urban for 5 to 10-Year Storms

Land Use		Runoff Coefficient	
		Min.	Max.
Pavement	- asphalt or concrete	0.80	0.95
- brick		0.70	0.85
Gravel roads and shoulders		0.40	0.60
Roofs		0.70	0.95
Business	- downtown	0.70	0.95
- neighbourhood		0.50	0.70
- light		0.50	0.80
- heavy		0.60	0.90
Residential	- single family urban	0.30	0.50
- multiple, detached		0.40	0.60
- multiple, attached		0.60	0.75
- suburban		0.25	0.40
Industrial	- light	0.50	0.80
- heavy		0.60	0.90
Apartments		0.50	0.70
Parks, cemeteries		0.10	0.25
Playgrounds (unpaved)		0.20	0.35
Railroad yards		0.20	0.35
Unimproved areas		0.10	0.30
Lawns	- Sandy soil		
- flat, to 2%		0.05	0.10
- average, 2 to 7%		0.10	0.15
- steep, over 7%		0.15	0.20
- Clayey soil			
- flat, to 2%		0.13	0.17
- average, 2 to 7%		0.18	0.22
- steep, over 7%		0.25	0.35

For flat or permeable surfaces, use the lower values. For steeper or more impervious surfaces, use the higher values. For return period of more than 10 years, increase above values as 25-year - add 10%, 50-year - add 20%, 100-year - add 25%.

The coefficients listed above are for unfrozen ground.

Design Chart 1.07: Runoff Coefficients (Continued)

- Rural

Land Use & Topography[3]	Soil Texture		
	Open Sand Loam	Loam or Silt Loam	Clay Loam or Clay
CULTIVATED			
Flat 0 - 5% Slopes	0.22	0.35	0.55
Rolling 5 - 10% Slopes	0.30	0.45	0.60
Hilly 10- 30% Slopes	0.40	0.65	0.70
PASTURE			
Flat 0 - 5% Slopes	0.10	0.28	0.40
Rolling 5 - 10% Slopes	0.15	0.35	0.45
Hilly 10- 30% Slopes	0.22	0.40	0.55
WOODLAND OR CUTOVER			
Flat 0 - 5% Slopes	0.08	0.25	0.35
Rolling 5 - 10% Slopes	0.12	0.30	0.42
Hilly 10- 30% Slopes	0.18	0.35	0.52
BARE ROCK	COVERAGE[3]		
	30%	50%	70%
Flat 0 - 5% Slopes	0.40	0.55	0.75
Rolling 5 - 10% Slopes	0.50	0.65	0.80
Hilly 10- 30% Slopes	0.55	0.70	0.85
LAKES AND WETLANDS	0.05		

[2] Terrain Slopes

[3] Interpolate for other values of % imperviousness

Sources: American Society of Civil Engineers - ASCE (1960)
U.S. Department of Agriculture (1972)

Table 2-2a Runoff curve numbers for urban areas [1/]

Cover description: Cover type and hydrologic condition	Average percent impervious area [2/]	Curve numbers for hydrologic soil group: A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.) [3/]:					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only) [4/]		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82
Developing urban areas					
Newly graded areas (pervious areas only, no vegetation) [5/]		77	86	91	94
Idle lands (CN's are determined using cover types similar to those in table 2-2c).					

[1] Average runoff condition, and $I_a = 0.2S$.

[2] The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.

[3] CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.

[4] Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.

[5] Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4 based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

Table 2-2b Runoff curve numbers for cultivated agricultural lands [1/]

Cover description			Curve numbers for hydrologic soil group			
Cover type	Treatment [2/]	Hydrologic condition [3/]	A	B	C	D
Fallow	Bare soil	—	77	86	91	94
	Crop residue cover (CR)	Poor	76	85	90	93
		Good	74	83	88	90
Row crops	Straight row (SR)	Poor	72	81	88	91
		Good	67	78	85	89
	SR + CR	Poor	71	80	87	90
		Good	64	75	82	85
	Contoured (C)	Poor	70	79	84	88
		Good	65	75	82	86
	C + CR	Poor	69	78	83	87
		Good	64	74	81	85
	Contoured & terraced (C&T)	Poor	66	74	80	82
		Good	62	71	78	81
	C&T+ CR	Poor	65	73	79	81
		Good	61	70	77	80
Small grain	SR	Poor	65	76	84	88
		Good	63	75	83	87
	SR + CR	Poor	64	75	83	86
		Good	60	72	80	84
	C	Poor	63	74	82	85
		Good	61	73	81	84
	C + CR	Poor	62	73	81	84
		Good	60	72	80	83
	C&T	Poor	61	72	79	82
		Good	59	70	78	81
	C&T+ CR	Poor	60	71	78	81
		Good	58	69	77	80
Close-seeded or broadcast legumes or rotation meadow	SR	Poor	66	77	85	89
		Good	58	72	81	85
	C	Poor	64	75	83	85
		Good	55	69	78	83
	C&T	Poor	63	73	80	83
		Good	51	67	76	80

[1] Average runoff condition, and I_a=0.2S

[2] Crop residue cover applies only if residue is on at least 5% of the surface throughout the year.

[3] Hydraulic condition is based on combination factors that affect infiltration and runoff, including (a) density and canopy of vegetative areas, (b) amount of year-round cover, (c) amount of grass or close-seeded legumes, (d) percent of residue cover on the land surface (good 20%), and (e) degree of surface roughness.

Poor: Factors impair infiltration and tend to increase runoff.

Good: Factors encourage average and better than average infiltration and tend to decrease runoff.

Table 2-2c Runoff curve numbers for other agricultural lands [1/]

Cover description		Curve numbers for hydrologic soil group			
Cover type	Hydrologic condition	A	B	C	D
Pasture, grassland, or range—continuous forage for grazing. [2/]	Poor	68	79	86	89
	Fair	49	69	79	84
	Good	39	61	74	80
Meadow—continuous grass, protected from grazing and generally mowed for hay.	—	30	58	71	78
Brush—brush-weed-grass mixture with brush the major element. [3/]	Poor	48	67	77	83
	Fair	35	56	70	77
	Good	30 [4/]	48	65	73
Woods—grass combination (orchard or tree farm). [5/]	Poor	57	73	82	86
	Fair	43	65	76	82
	Good	32	58	72	79
Woods. [6/]	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	30 [4/]	55	70	77
Farmsteads—buildings, lanes, driveways, and surrounding lots.	—	59	74	82	86

1 Average runoff condition, and $I_a = 0.2S$.

2 *Poor:* <50%) ground cover or heavily grazed with no mulch.
Fair: 50 to 75% ground cover and not heavily grazed.
Good: > 75% ground cover and lightly or only occasionally grazed.

3 *Poor*: <50% ground cover.
Fair: 50 to 75% ground cover.
Good: >75% ground cover.

4 Actual curve number is less than 30; use CN = 30 for runoff computations.

5 CN's shown were computed for areas with 50% woods and 50% grass (pasture) cover. Other combinations of conditions may be computed from the CN's for woods and pasture.

6 *Poor:* Forest litter, small trees, and brush are destroyed by heavy grazing or regular burning.
Fair: Woods are grazed but not burned, and some forest litter covers the soil.
Good: Woods are protected from grazing, and litter and brush adequately cover the soil.

SILVER STREET TOWNHOMES

Modified Rational Method - Pre Development Catchment 101

Port Carling, Ontario

Project Number: 24-11837M
Date: April 4, 2025
Design By: DPH
File: Z:\Project Documents\11837M Harris-Silver St. TH's Port Carling\Detailed Design Work\Design Sheets\MRM SWM Calculations - DH FINAL.xls

IDF Curve Parameters				Intensity
Storm Event	A	B	C	(mm/hr)
2 year	789.5	7.83	0.830	109.12
5 year	950.0	6.75	0.820	146.54
10 year	1221.0	7.38	0.843	169.56
25 year	1452.0	7.30	0.848	200.60
50 year	1466.0	6.55	0.832	223.86
100 year	1499.0	5.81	0.825	248.51

Tc = 3.0 minutes

$$i = \frac{A}{(t_c + B)^c}$$

I = average rainfall intensity (mm/hr)
A,B,C, = the IDF equation coefficients (dimensionless)
T_c = time of concentration (min)

Runoff Coefficients	
Land Use	"C"
Unimproved Area	0.30
Pasture Land	0.40
Woodlot	0.35
Lakes / Swamps	0.95
Impervious Area	0.95
Building Area	0.95
Gravel	0.60
Lawn	0.22
X	0.00
Y	0.00
Z	0.00

Time of Concentration Calculations:

Catchment Parameters			
Catchment ID	=	101	
Catchment Area	=	0.2160	ha
Flow Length	=	60	m
Slope	=	0.04	m/m
Weighted Runoff Coefficient	=	0.56	
Time of Concentration Results			
Bransby Williams Formula (use for C>0.4)	=	3.0	min.
Airport Formula (use for C<=0.4)	=	8.7	min.
Time to Peak			
2/3 of Time of Concentration	=	0.03	hr

Pre-Development Runoff Coefficients:

Catchment	Total Area (m^2)	Unimproved Area (m^2)	Pasture Area (m^2)	Woodlot Area (m^2)	Lakes/Swamps Area (m^2)	Impervious Area (m^2)	Building Area (m^2)	Gravel Area (m^2)	Lawn Area (m^2)	X Area (m^2)	Y Area (m^2)	Z Area (m^2)	Weighted C
101	2,160			1,410	750								0.56

Runoff Coefficient Adjustment for 25-100 yr Storm Events:

Catchment	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year
101	0.56	0.56	0.56	0.61	0.67	0.70

Pre-Development Peak Flow Rates:

Catchment	2-Year (m^3/s)	5-Year (m^3/s)	10-Year (m^3/s)	25-Year (m^3/s)	50-Year (m^3/s)	100-Year (m^3/s)
101	0.037	0.049	0.057	0.074	0.090	0.104

Notes:

1) Runoff coefficients taken from Chart 1.07 of the MTO Drainage Management Manual (1997).
2) Runoff coefficients for events greater than the 10 year storm have been adjusted as per Part 3 of the MTO Drainage Management Manual (1997).

SILVER STREET TOWNHOMES

Modified Rational Method - Post Development Catchment 201

Port Carling, Ontario

Project Number: 24-11837M
Date: April 4, 2025
Design By: DPH
File: Z:\Project Documents\11837M Harris-Silver St. TH's Port Carling\Detailed Design Work\Design Sheets\MRM SWM Calculations - DH FINAL.xls

IDF Curve Parameters				Intensity
Storm Event	A	B	C	(mm/hr)
2 year	789.5	7.83	0.830	99.56
5 year	950.0	6.75	0.820	132.60
10 year	1221.0	7.38	0.843	153.89
25 year	1452.0	7.30	0.848	181.83
50 year	1466.0	6.55	0.832	201.85
100 year	1499.0	5.81	0.825	222.48

Tc = 4.3 minutes

$$i = \frac{A}{(t_c + B)^c}$$

I = average rainfall intensity (mm/hr)
A,B,C, = the IDF equation coefficients (dimensionless)
T_c = time of concentration (min)

Runoff Coefficients	
Land Use	"C"
Unimproved Area	0.30
Pasture Land	0.40
Woodlot	0.35
Lakes / Swamps	0.95
Impervious Area	0.95
Building Area	0.95
Gravel	0.60
Lawn	0.22
X	0.00
Y	0.00
Z	0.00

Time of Concentration Calculations:

Catchment Parameters			
Catchment ID	=	201	
Catchment Area	=	0.2160	ha
Flow Length	=	70	m
Slope	=	0.015	m/m
Weighted Runoff Coefficient	=	0.49	
Time of Concentration Results			
Bransby Williams Formula (use for C>0.4)	=	4.3	min.
Airport Formula (use for C<=0.4)	=	14.6	min.
Time to Peak			
2/3 of Time of Concentration	=	0.05	hr

Post-Development Runoff Coefficients:

Catchment	Total Area (m^2)	Unimproved Area (m^2)	Pasture Area (m^2)	Woodlot Area (m^2)	Lakes/Swamps Area (m^2)	Impervious Area (m^2)	Building Area (m^2)	Gravel Area (m^2)	Lawn Area (m^2)	X Area (m^2)	Y Area (m^2)	Z Area (m^2)	Weighted C
201	2,160					245	550		1,365				0.49

Runoff Coefficient Adjustment for 25-100 yr Storm Events:

Catchment	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year
201	0.49	0.49	0.49	0.54	0.59	0.61

Post-Development Peak Flow Rates:

Catchment	2-Year (m^3/s)	5-Year (m^3/s)	10-Year (m^3/s)	25-Year (m^3/s)	50-Year (m^3/s)	100-Year (m^3/s)
201	0.029	0.039	0.045	0.059	0.071	0.082

Notes:

1) Runoff coefficients taken from Chart 1.07 of the MTO Drainage Management Manual (1997).
2) Runoff coefficients for events greater than the 10 year storm have been adjusted as per Part 3 of the MTO Drainage Management Manual (1997).

SILVER STREET TOWNHOMES

Modified Rational Method - Pre to Post Development Flow Summary

Port Carling, Ontario

PINESTONE ENGINEERING LTD.

Project Number: 24-11837M
Date: April 4, 2025
Design By: DPH
File: Z:\Project Documents\11837M Harris-Silver St. TH's Port Carling\Detailed Design Work\Design Sheets\MRM SWM Calculations - DH FINAL.xls

Storm Event	2 Year (m^3/s)	5 Year (m^3/s)	10 Year (m^3/s)	25 Year (m^3/s)	50 Year (m^3/s)	100 Year (m^3/s)
Pre-Development Catchment 101	0.037	0.049	0.057	0.074	0.090	0.104
Total Pre-Development Flow	0.037	0.049	0.057	0.074	0.090	0.104
Post-Development Catchment 201 (uncontrolled)	0.029	0.039	0.045	0.059	0.071	0.082
Total Post-Development Flow	**0.029**	**0.039**	**0.045**	**0.059**	**0.071**	**0.082**
Total Difference from Post to Pre	**-0.007**	**-0.010**	**-0.012**	**-0.015**	**-0.019**	**-0.023**

SILVER STREET TOWNHOMES

Port Carling
District of Muskoka

Project Number: 24-11837M
Date: May 1, 2026
Design By: DPH
Checked By: JV
File: Z:\Project Documents\11837M Harris-Silver St. TH's Port Carling\REV 1\Design Sheets\Ditch Design Sheet Final.xls

DITCH FLOWRATES

ENGINEERING AND PUBLIC WORKS

Design Parameters

10 YEAR STORM

Q=kAIR, k=0.00278
Intensity (I) = $a/(tc+b)^c$
a = 1221.0
b = 7.38
c = 0.843

PEL PINESTONE ENGINEERING LTD.

LOCATION				STORMWATER FLOW 10 YEAR STORM								DESIGN					
STREET	AREA NUMBER	MANHOLE LOCATION FROM MH	MANHOLE LOCATION TO MH	AREA (A)	RUNOFF COEFF. (C)	A x C	CUMUL. A x C	CONCENTRATION TIME TOTAL	CONCENTRATION TIME IN PIPE	RAIN INTENSITY (I)	FLOW (Q)	PIPE SIZE	LENGTH	SLOPE	CAPACITY	FULL FLOW VELOCITY	ACTUAL VELOCITY
				ha		*ha*	*ha*	*min*	*min*	*mm/hr*	*L/s*	*mm*	*m*	*%*	*L/s*	*m/s*	*m/s*
DRAINAGE DITCH (UNITS 4-5)	301			0.650	0.53	0.345	0.345	7.134		128.035	122.179						

Catchment Parameters

Catchment ID	=	301	
Catchment Area	=	0.650	ha
Flow Length	=	190	m
Slope	=	0.100	m/m
Weighted Runoff Coefficient	=	0.53	

Time of Concentration Results

Bransby Williams Formula (use for C>0.4)	=	7.1	min.
Airport Formula (use for C<=0.4)	=	12.0	min.

SILVER STREET TOWNHOMES

Port Carling
District of Muskoka

Project Number: 24-11837M
Date: May 1, 2026
Design By: DPH
Checked By: JV
File: Z:\Project Documents\11837M Harris-Silver St. TH's Port Carling\REV 1\Design Sheets\Ditch Design Sheet Final.xls

DITCH FLOWRATES

ENGINEERING AND PUBLIC WORKS

Design Parameters

100 YEAR STORM

Q=kAIR, k=0.00278
Intensity (I) = $a/(tc+b)^c$
a = 1499.0
b = 5.81
c = 0.825

PINESTONE ENGINEERING LTD.

LOCATION				STORMWATER FLOW 100 YEAR STORM								DESIGN					
STREET	AREA NUMBER	MANHOLE LOCATION FROM MH	MANHOLE LOCATION TO MH	AREA (A)	RUNOFF COEFF. (C)	A x C	CUMUL. A x C	CONCENTRATION TIME TOTAL	CONCENTRATION TIME IN PIPE	RAIN INTENSITY (I)	FLOW (Q)	PIPE SIZE	LENGTH	SLOPE	CAPACITY	FULL FLOW VELOCITY	ACTUAL VELOCITY
				ha		*ha*	*ha*	*min*	*min*	*mm/hr*	*L/s*	*mm*	*m*	*%*	*L/s*	*m/s*	*m/s*
DRAINAGE DITCH (UNITS 4-5)	301			0.650	0.66	0.429	0.429	7.134		181.277	215.417						

Catchment Parameters

Catchment ID	=	301	
Catchment Area	=	0.650	ha
Flow Length	=	190	m
Slope	=	0.100	m/m
Weighted Runoff Coefficient	=	0.66	

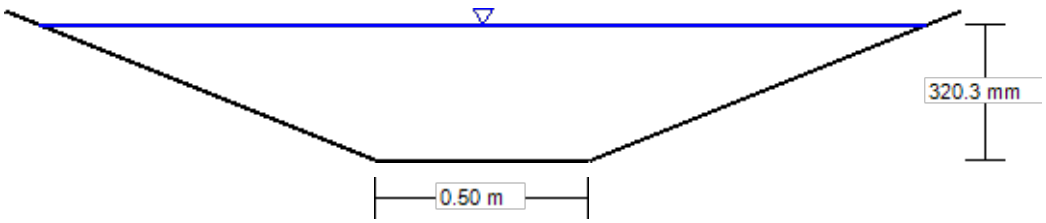
Time of Concentration Results

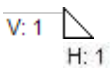
Bransby Williams Formula (use for C>0.4)	=	7.1	min.
Airport Formula (use for C<=0.4)	=	9.2	min.

Cross Section for Trapezoidal Channel (Unit 4-5) - 10-Year

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data		
Roughness Coefficient	0.050	
Channel Slope	0.002	m/m
Normal Depth	320.3	mm
Left Side Slope	2.500	H:V
Right Side Slope	2.500	H:V
Bottom Width	0.50	m
Discharge	122.00	L/s

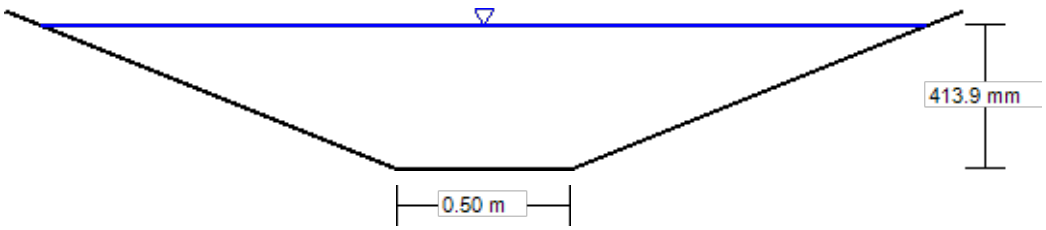


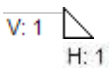


Cross Section for Trapezoidal Channel (Unit 4-5) - 100-Year

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

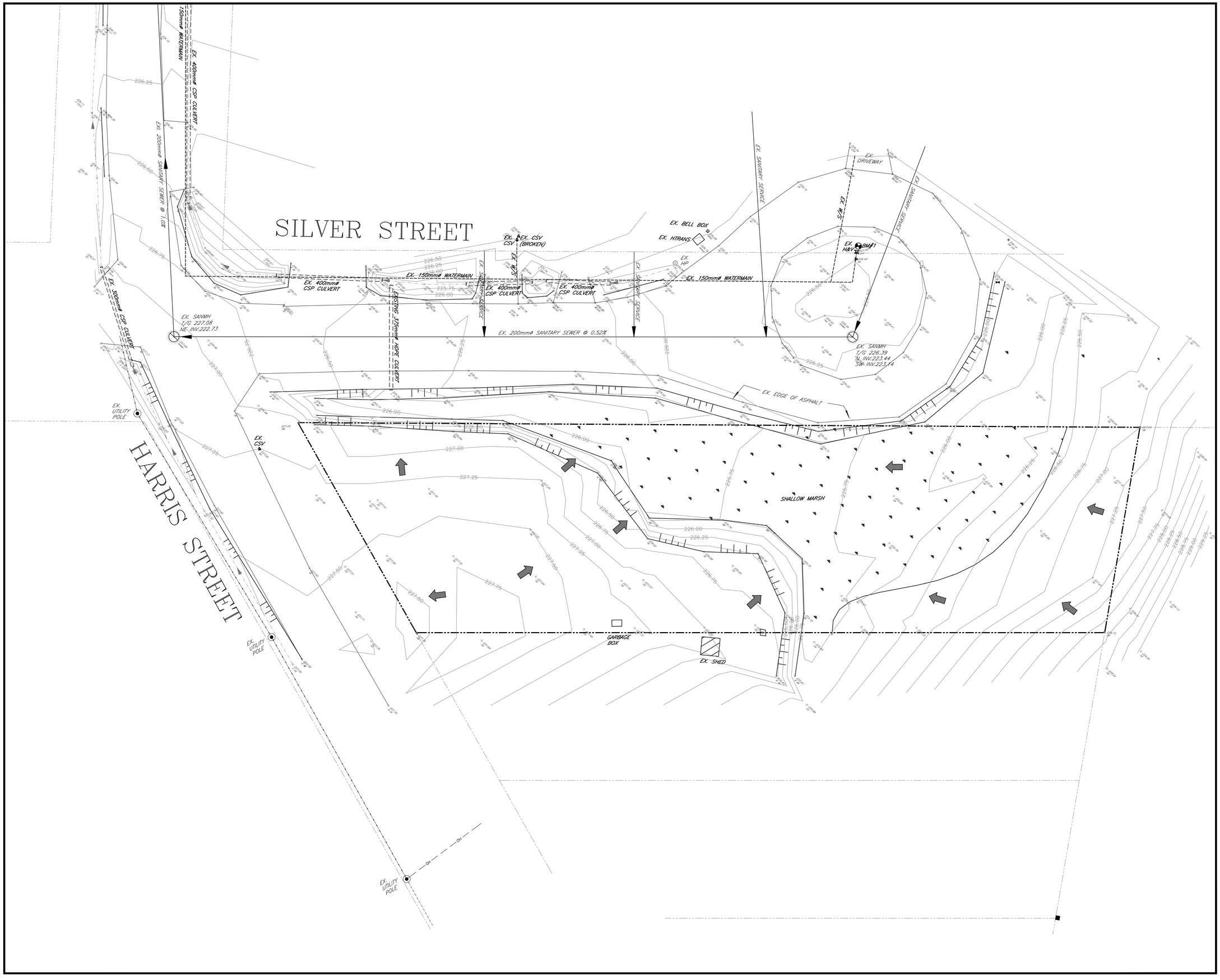
Input Data		
Roughness Coefficient	0.050	
Channel Slope	0.002	m/m
Normal Depth	413.9	mm
Left Side Slope	2.500	H:V
Right Side Slope	2.500	H:V
Bottom Width	0.50	m
Discharge	215.00	L/s

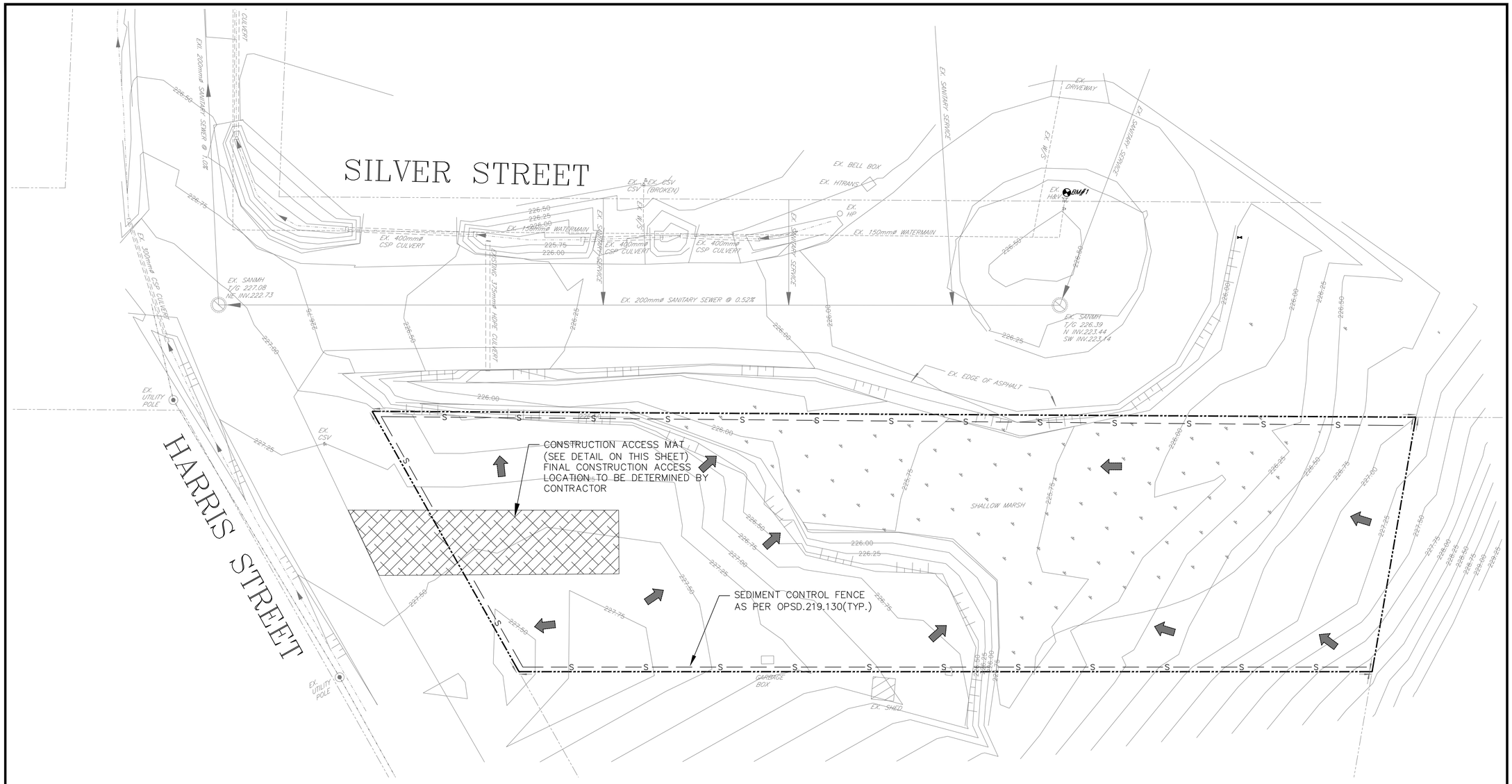


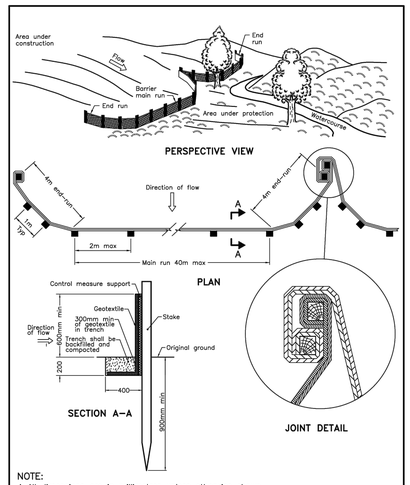


APPENDIX E

Engineering Drawings


SILVER STREET
HARRIS STREET
EX. 150mmø WATERMAIN
EX. 400mmø CSP CULVERT
EX. 200mmø SANITARY SEWER @ 1.0%
EX. 300mmø CSP CULVERT
EX. SANMH T/G 227.08 NE. INV.222.73
EX. 200mmø SANITARY SEWER @ 0.52%
EXISTING 375mmø HDPE CULVERT
EX. CSV (BROKEN)
EX. CSV
EX. BELL BOX
EX. HYDRO
EX. HP
EX. SANITARY SERVICE
EX. DRIVEWAY
EX. H&V
SM#1
EX. SANMH T/G 226.39 NW. INV.223.44 SW. INV.223.14
EX. EDGE OF ASPHALT
SHALLOW MARSH
GARBAGE BOX
EX. SHED
EX. UTILITY POLE
EX. CSV
226.50
226.25
225.75
226.00
227.00
227.25
227.50
226.75
226.25
226.50
226.75
227.00
227.25
227.50
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235.75
236.00



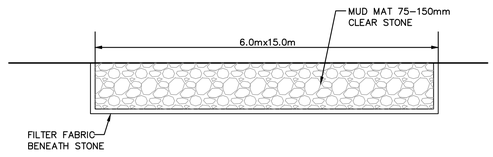


NOTE:
A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2021	Rev 3
HEAVY-DUTY SILT FENCE BARRIER		OPSD 219.130

EROSION CONTROL NOTES:

1. All silt fencing to be installed prior to any grading or excavation.
2. Erosion control fencing to be installed around the base of all stockpiles.
3. Additional erosion control measures may be required as site development progresses. Contractor to provide all additional erosion control structures as directed by the engineer.
4. Pinestone Engineering Ltd. to monitor erosion control structures to ensure fencing is installed and maintenance is performed to municipal requirements.
5. Erosion control structures to be monitored regularly and any damage repaired immediately. Sediments to be removed when accumulations reach a maximum of 1/2 the height of the fence.
6. All erosion control structures to remain in place until all disturbed ground have been re-stabilized either by paving or restoration of vegetative ground cover.
7. No alternate methods of erosion protection shall be permitted unless approved Pinestone Engineering Ltd. and the Township of Muskoka Lakes department of public works.
8. Contractor is responsible for municipal roadway to be cleared of all sediments from vehicular tracking etc. at the end of each day.



CONSTRUCTION ACCESS DETAIL

NTS

DESIGNATED ACCESS FOR ALL CONSTRUCTION TRAFFIC

INSTALL 'MUD MAT', AS PER DETAIL BELOW, PRIOR TO ANY OTHER CONSTRUCTION. MAT TO BE MAINTAINED IN GOOD WORKING ORDER UNTIL GRADING WORKS AREA COMPLETED AND GRANULAR "A" AND "B" HAVE BEEN PLACED.

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Drawings shall not be used for construction unless sealed and signed. All work to be performed in accordance with the Occupational Health & Safety Act 1990.

Any errors and/or omissions shall be reported to Pinestone Engineering Ltd. without delay.



KEY MAP

NOTES

1. TOPOGRAPHIC SURVEY COMPLETED BY PINESTONE ENGINEERING LTD. NOVEMBER 2024.
2. LEGAL SUVERY COMPLETED BY CHAPPLE, GALBRAITH SURVEYORS LTD. FEBRUARY 2024.
3. EXISTING SANITARY INVERT ELEVATIONS FROM DISTRICT AS-BUILTS AND ARE CONSIDERED APPROXIMATE ONLY CONTRACTOR TO VERIFY IN THE FIELD.

LEGEND

- 248.25 — EXISTING CONTOUR
- EXISTING PROPERTY LINE
- EXISTING CATCHBASIN MANHOLE
- EXISTING CATCHBASIN
- EXISTING SANITARY MANHOLE
- EXISTING CURB STOP VALVE
- EXISTING HYDRANT AND VALVE
- EXISTING BELL BOX
- HV — EXISTING HYDRO VAULT
- SIB ■ — EXISTING STANDARD IRON BAR
- IB □ — EXISTING IRON BAR
- EXISTING CENTRELINE OF DITCH
- EXISTING WATER SERVICING
- EXISTING SANITARY SERVICING
- CONSTRUCTION MUDMAT
- S —— S — SILT FENCE

BENCHMARK

TBM#1 TOP NUT OF HYDRANT
ELEVATION 227.56m

NO.	YY.MM.DD	REVISION	BY
1	26.05.01	REVISED PER TOWNSHIP COMMENTS	J.L.

SEAL

LICENSED PROFESSIONAL ENGINEER
D. P. HORDYK
100530028
2026-05-01
PROVINCE OF ONTARIO

NORTH ARROW

DESIGN BY:	J.V. D.H.
DRAWN BY:	J.L.
CHECKED	J.V.
DATE:	APRIL 2025
SCALE:	1:200

CLIENT/PROJECT

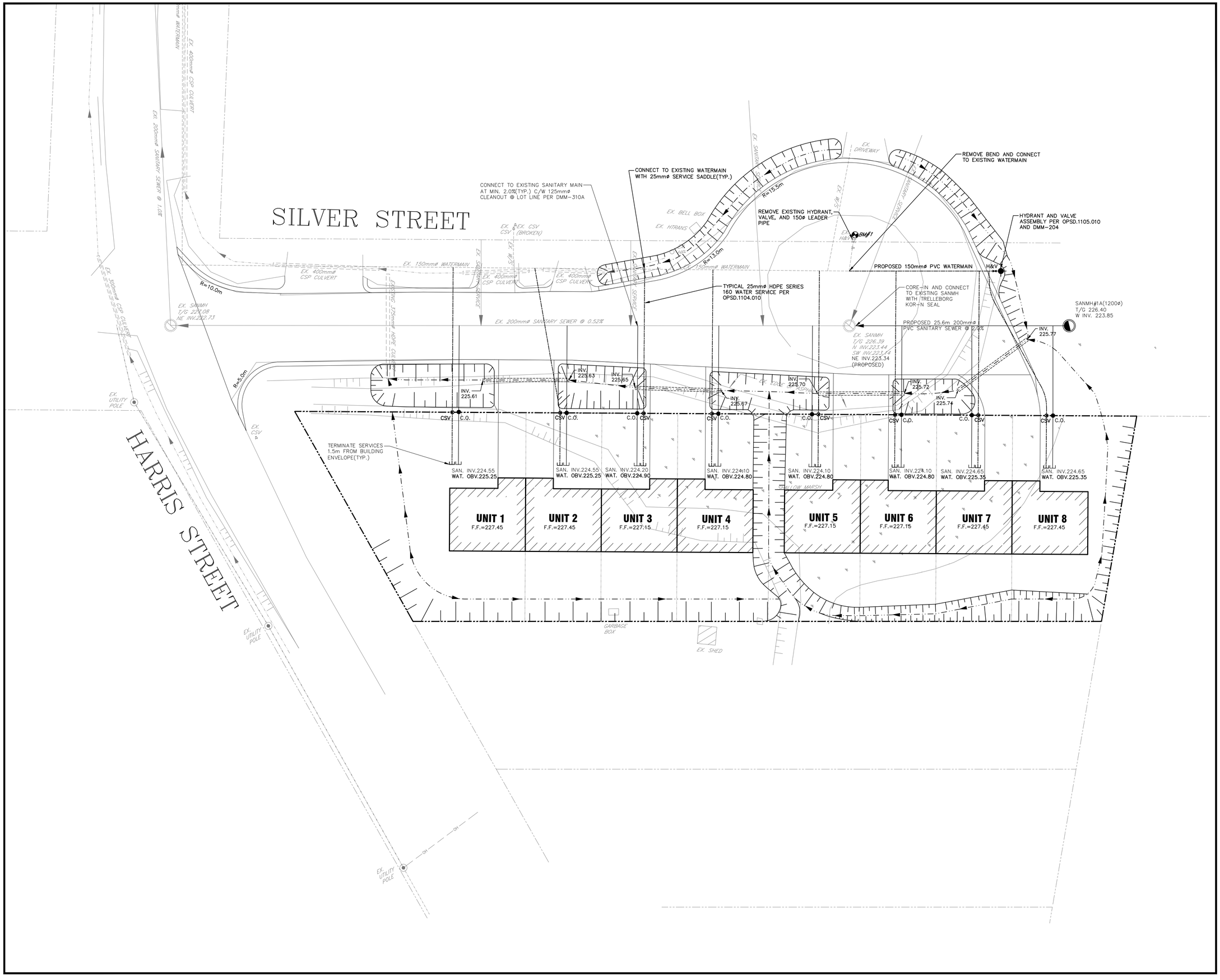
SILVER STREET TOWNHOMES
PORT CARLING

DRAWING TITLE

EROSION AND SEDIMENT CONTROL PLAN

PROJECT NO.	DRAWING NO.	REVISION
24-11837M	ESC-1	1

DWG NAME

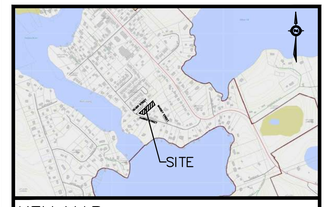


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LEGEND

- EXISTING CONTOUR
- EXISTING PROPERTY LINE
- EXISTING CATCHBASIN MANHOLE
- EXISTING CATCHBASIN
- EXISTING SANITARY MANHOLE
- EXISTING CURB STOP VALVE
- EXISTING HYDRANT AND VALVE
- EXISTING BELL BOX
- EXISTING HYDRO VAULT
- EXISTING CENTRELINE OF DITCH
- EXISTING WATER SERVICING
- EXISTING SANITARY SERVICING
- PROPOSED SANITARY MANHOLE
- CSV PROPOSED CURB STOP VALVE
- C.O. PROPOSED SANITARY CLEANOUT

BENCHMARK

TBM#1 TOP NUT OF HYDRANT
ELEVATION 227.56m

NO.	YY.MM.DD	REVISION	BY
1	26.05.01	REVISED PER TOWNSHIP COMMENTS	J.L.

SEAL

LICENSED PROFESSIONAL ENGINEER
D. P. HORDYK
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2026-05-01
PROVINCE OF ONTARIO

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DESIGN BY:	J.V. D.H.
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CLIENT/PROJECT

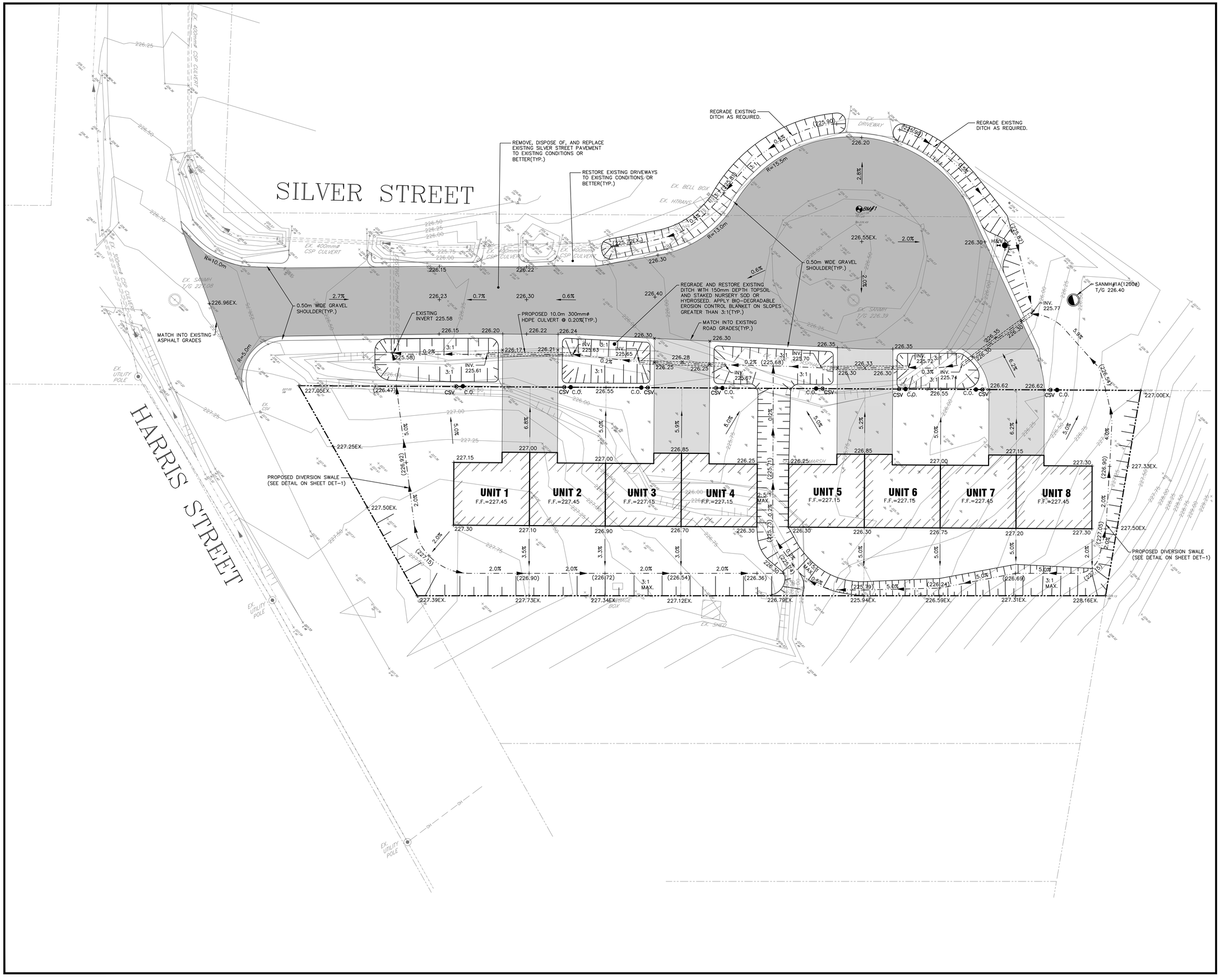
SILVER STREET TOWNHOMES
PORT CARLING

DRAWING TITLE

SITE SERVICING PLAN

PROJECT NO.	DRAWING NO.	REVISION
24-11837M	SERV-1	1

DWG NAME



PEL
PINESTONE ENGINEERING LIMITED | www.pel.ca

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KEY MAP

NOTES

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LEGEND

- 248.25 EXISTING CONTOUR
- EXISTING PROPERTY LINE
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- EXISTING CURB STOP VALVE
- EXISTING HYDRANT AND VALVE
- EXISTING BELL BOX
- EXISTING HYDRO VAULT
- x 245.00 PROPOSED ELEVATION
- x 245.00EX. EXISTING ELEVATION
- EXISTING CENTRELINE OF DITCH
- EXISTING WATER SERVICING
- EXISTING SANITARY SERVICING
- PROPOSED ASPHALT DRIVEWAY
- PROPOSED ASPHALT ROAD
- PROPOSED SANITARY MANHOLE
- CSV PROPOSED CURB STOP VALVE
- C.O. PROPOSED SANITARY CLEANOUT

BENCHMARK

TBM#1 TOP NUT OF HYDRANT
ELEVATION 227.56m

NO.	YY.MM.DD	REVISION	BY
1	26.05.01	REVISED PER TOWNSHIP COMMENTS	J.L.

SEAL

LICENSED PROFESSIONAL ENGINEER
D. P. HORDYK
100530228
2026-05-01
PROVINCE OF ONTARIO

NORTH ARROW

DESIGN BY:	J.V. D.H.
DRAWN BY:	J.L.
CHECKED	J.V.
DATE:	APRIL 2026
SCALE:	1:200

CLIENT/PROJECT

SILVER STREET TOWNHOMES
PORT CARLING

DRAWING TITLE

SITE GRADING PLAN

PROJECT NO.	DRAWING NO.	REVISION
24-11837M	GP-1	1

DWG NAME

GENERAL NOTES

1. All standards in accordance with current Ontario Provincial Standard Drawings (OPSD) and Ontario Provincial Standard Specifications (OPSS) unless otherwise noted.
2. All dimensions are in metres. Pipe sizes in millimetres unless otherwise noted.
3. Notify Bell Canada, Union Gas, Water and Sewer, Hydro and Cable Departments (where applicable) 72 hours prior to commencement for locates.
4. The Contractor shall coordinate the works with the Engineer who shall oversee the project on behalf of the owner.
5. All construction to be completed to the satisfaction of the Engineer.
6. All trenching to be in accordance with the Occupational Health and Safety Act.
7. All traffic control and signage to be in accordance with M.T.O. Book 7 requirements.
8. District of Muskoka, Township of Muskoka Lakes and Engineer to be notified at least 72 hours prior to construction.
9. Wherever pipes are passing through uncompacted fill areas, the bedding trench shall be excavated to the undisturbed ground level and backfilled with Granular 'A' compacted to 95% standard proctor density or as otherwise shown on the drawings.
10. Perform all blasting in accordance with the specification. Undertake pre-blast survey and provide copy to Engineer prior to commencement of blasting operations.
11. The location of underground and above ground utilities and structures shown on drawings is approximate only and may not be complete. The exact location of all utilities and structures shall be determined by consulting the Municipal authorities and Utilities companies concerned. The contractor shall prove the exact location of all utilities and structures before construction and shall be responsible for adequately protecting them against damage, assuming all liabilities for damage of such.
12. The Contractor must check and verify dimensions, obtain all utility locates, and obtain all required permits and licenses and verify existing service elevations before proceeding with any work.
13. Latest approved drawings to be used for construction and all discrepancies reported to the Engineer.
14. Drawings are not to be scaled.
15. All materials to be used on this project shall be lead free.
16. Pipe length as labeled is measured horizontally along pipe centre line and may differ from baseline chainage where baseline is not parallel to pipe.
17. Utilize erosion and siltation controls as necessary during construction to control sediment/silt runoff from the site.
18. Ensure accessibility to existing residential driveways at all times.
19. Ensure adequate protection to all culverts.
20. Building storm outlets are not to connect to the sanitary lateral and are to discharge to grade.

SANITARY SEWER NOTES

1. Work shall conform to OPSS.410 and the Ontario Building Code and DMM standards. Pipe embedment and backfill shall conform to OPSD 802.010 and 802.013. Pipe embedment material to springline shall consist of Granular "A" or 19mm diameter clear stone. Embedment from springline to 300mm above pipe shall consist of sand. Backfill to be approved native material or select material.
2. Sanitary sewer to be PVC SDR 35 200mmø. Trench backfill to road subgrade elevation shall consist of approved native material compacted to 95% SPD.
3. Sanitary sewer services to be PVC SDR 28 125mmø.
4. All manholes to be minimum 1200mm dia. precast with aluminum rungs at 300mm centers per OPSD.701.010, 405.010 and 401.010.
5. Provide water tight boot pipe-to-manholes connectors in sanitary manholes.
6. All manholes to be benched per OPSD 701.021
7. Sanitary sewers to be tested in accordance with OPSS 409 & 410. Pipes to be cleaned and flushed prior to the video inspection. Standing water test and sewer test to be completed in accordance with District of Muskoka's guidelines. District of Muskoka Staff to be present during standing water and sag limits test.
8. All frames/lids for manhole in roadways shall be 3 piece adjustable units such as Bibby (Autostable) C-50M-ONT(6"), Meuller "Adjustable" AJ633(152) or approved equivalent.
9. Sanitary sewers to be video inspected providing dvd(or USB) recording copy in triplicate (3) and report of inspection to the Engineer. Sewers are to be inspected once at initial acceptance and once at final assumption without defect.
10. Frost straps to be installed as per OPSD 701.100.
11. 30 days prior to both initial and final inspection, a video inspection and report shall be completed and presented to municipal staff. Method shall comply with District specifications.

WATERMAIN NOTES

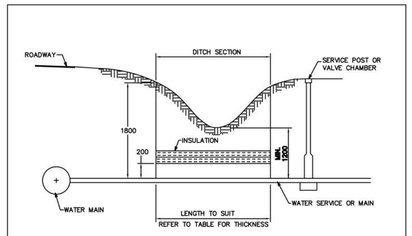
1. Work shall conform to OPSS. 441.
2. Install coated No. 12 gauge standard tracer wire on all watermains as per District Standards. Tracer wire at valve boxes to conform to DMM 213.
3. All watermains to have 1.8m minimum cover as shown on the drawings.
4. Unless noted otherwise, all watermains to be Class 235(DR 18) PVC material in accordance with AWWA C-900 Standard. Exterior of all uncoated D.I. fittings, valves, mechanical joint restraints & associated connections shall have denso petrolatum mastic and or tape applicator corrossion protection.
5. All dimensions are in metres. Pipe sizes are in millimetres unless otherwise noted.
6. Exact horizontal and vertical alignment of existing watermain at point of connection to be determined in the field.
7. Valve and Valve boxes to be installed accordance with OPSS. 441
8. Blow off assemblies to be in accordance with OPSD. 1104.030.
9. Vertical bend distances (DMM-201) are not indicated on drawings and are to be installed. as required. All watermain fittings tee's, bends, end caps etc. must comply with the District of Muskoka's approved product list.
10. Watermains located in fill shall be bedded on compacted Granular 'A' founded on native ground. Granular 'A' to be compacted to 95% SPD.
11. Watermains must be pressure tested, chlorinated, and pigged with foam swabs as indicated with latest revision of the Ontario Building code and in accordance with the District of Muskoka's approved standard operating procedure WS-09.
12. All gate valves shall be resilient seat type to AWWA C-509 Standards.
13. All water services to be 25mm dia. series 160 HDPE unless otherwise noted. Provide 1.8m cover for water services at ditch crossings. Service saddles shall be all stainless steel, double-bolt and fully gasketed(Robar 2616 Boss Pad, or Cambridge Brass 8403PG). Pipe embedment and backfill shall conform to OPSD 802.010 and 802.013. Pipe embedment material to springline shall consist of Granular "A" or 19mm diameter clear stone. Embedment from springline to 300mm above pipe shall consist of sand. Trench backfill to road subgrade elevation shall consist of approved native material compacted to 95% SPD.
14. Watermain bedding shall be Granular 'A' to OPSD-802.010.
15. Vertical and horizontal bends in watermain can be achieved by deflections at joints and radius of curvature as per manufacturers specifications unless otherwise noted.
16. Watermains with gradients 4:1 or greater to be anchored. Shop drawings to be submitted for approval.
17. For PVC pressure pipe with a SDR of 18, an 200mm(8") band width will be used for 19-25mm(3/4"-1") dia. services. A 300mm band width will be used for 37-50mm(11/2"-2") services.
18. For PVC pressure pipe with a SDR greater than 18, service saddle band width will be 300mm for 19-25mm dia. services and 450mm(16") for 37-50mm dia.
19. All curb stops shall be ball type with compression joint inlet and outlet, non draining, and lead free brass construction with blow out proof stainless steel stems and unfiled Teflon seats, rated for 300psi conforming to ANSI/AWWA C800-05 and NSF/ANSI 61. Refer to the District of Muskoka's approved product list.
20. Connections of newly constructed watermains to existing watermains in accordance with AWWA standard C651 and DMM SOP WS-40.
21. Where watermains cross under utilities the minimum clearance shall be 0.50m. Watermain crossings under storm sewers will require insulation. For a watermain crossing a sewer, watermain joints are to be offset a minimum of 2.5m horizontally from the centerline of the sanitary sewer and maintain 0.50m vertical separation.

CULVERTS NOTES

1. Culverts shall be smooth wall 320KPa HDPE per BOSS 2000 with bell & spigot joint. Pipe embedment and backfill shall conform to OPSD 802.010 and 802.013. Pipe embedment material to springline shall consist of Granular "A" or 19mm diameter clear stone. Embedment from springline to 300mm above pipe shall consist of sand. Trench backfill to road subgrade elevation shall consist of approved native material compacted to 95% SPD.
2. Frost tapers at culverts to be per OPSD 803.030.
3. Roof drains are not to be connected to sanitary sewer system.

RESTORATION AND ROAD CONSTRUCTION NOTES

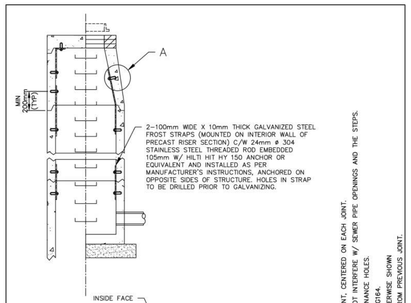
1. Reinstate roads to previous condition or better, where disturbed by construction activity.
2. Contractor to restore driveways and ditch work in areas disturbed by construction to equal or better conditions.
3. Minimum gravel driveway restoration to be 200mm, Granular 'A'. Asphalt Driveway restoration to be 50mm of HL3 on existing gravel subgrade.
4. All grassed areas disturbed during construction shall be restored with 150mm topsoil and sod or hydro mulched as per OPSS 507. Maintain until established.
5. All restoration work to be completed to the satisfaction of the Engineer.
6. Driveways to be constructed with 150mm Depth Granular 'A' and 50mm Depth HL 3 Asphalt.



INSULATION REFERENCE TABLE	
EFFECTIVE EARTH COVER	STYROFOAM SM HI-35 REQUIRED THICKNESS
1800 TO 1250mm	50mm
1250 TO 900mm	75mm

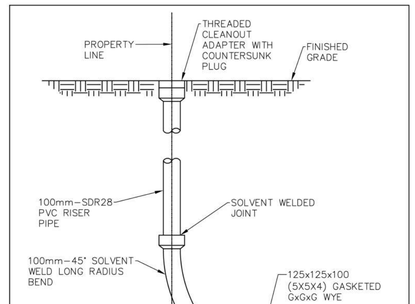
NOTES:
1. THE INSULATION SHALL BE MINIMUM 1200 WIDE AND SHALL BE CENTERED OVER THE PIPE.
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE NOTED.

THE DISTRICT MUNICIPALITY OF MUSKOKA	WATER MAIN INSULATION IN DITCHED AREAS	NOT TO SCALE DATE: JUNE 2024 DMM-212



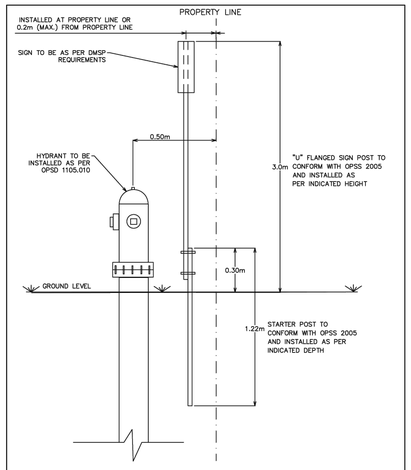
NOTES:
1. FROST STRAPS SHALL BE INSTALLED AT EACH JOINT, CENTERED ON EACH JOINT.
2. FROST STRAPS SHALL BE PLACED SO THEY DO NOT INTERFERE W/ SEWER PIPE OPENINGS AND THE STEPS.
3. FROST STRAPS SHALL BE PLACED ON ALL MAINTENANCE HOLES.
4. GALVANIZING SHALL BE ACCORDING TO CAN/CSA G164.
5. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN
6. EACH SET OF STRAPS TO BE VERTICAL OFFSET FROM PREVIOUS JOINT.

THE DISTRICT MUNICIPALITY OF MUSKOKA	FROST STRAP INSTALLATION - MONOLITHIC BASE	NOT TO SCALE DATE: JUNE 2024 DMM-309

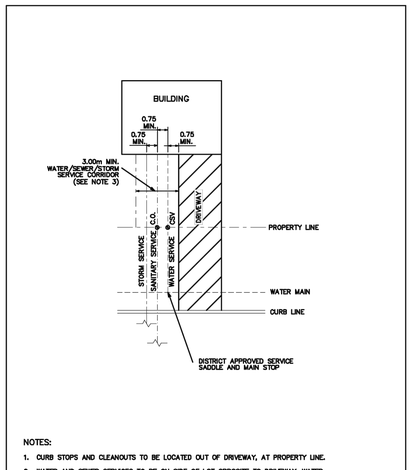


NOTES:
1) CLEAN-OUT TO BE IN ACCORDANCE WITH DISTRICT MUNICIPALITY OF MUSKOKA STANDARDS AND GUIDELINES.
2) CLEANOUT TO BE PROVIDED ON ALL SERVICES.
3) SEWER PIPE TO BE P.V.C SDR 28
4) BEDDING SHALL BE 19mm CLEAR STONE
5) ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED.

THE DISTRICT MUNICIPALITY OF MUSKOKA	SEWER CLEANOUT	NOT TO SCALE DATE: JUNE 2024 DMM-310A

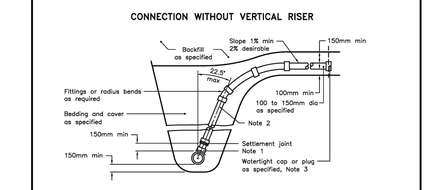


THE DISTRICT MUNICIPALITY OF MUSKOKA	FIRE HYDRANT MARKER INSTALLATION	NOT TO SCALE DATE: JUNE 2024 DMM-204



NOTES:
1. CURB STOPS AND CLEANOUTS TO BE LOCATED OUT OF DRIVEWAY, AT PROPERTY LINE.
2. WATER AND SEWER SERVICES TO BE ON SIDE OF LOT OPPOSITE TO DRIVEWAY, WATER SERVICE NEAREST TO DRIVEWAY.
3. NO UTILITIES IN SERVICE CORRIDOR.

THE DISTRICT MUNICIPALITY OF MUSKOKA	LOT SERVICE LOCATIONS SINGLE FAMILY AND TOWNHOUSE RESIDENTIAL	NOT TO SCALE DATE: JUNE 2024 DMM-203

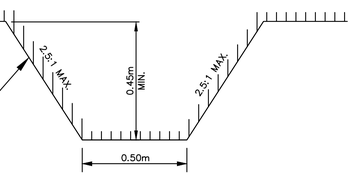


CONNECTION WITHOUT VERTICAL RISER

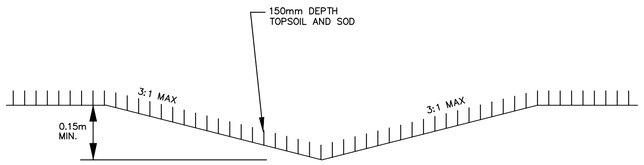
CONNECTION WITH VERTICAL RISER

NOTES:
1 Sewer service connections to the main pipe sewer shall be made using factory made tees, strap-on-saddles, or other approved saddles.
2 Vertical risers shall be as specified.
3 Cap or plug at property line shall be adequately braced.
A Maintenance holes shall be used at the main sewer to connect service connections greater than 200mm.
B For new construction, saddles shall be installed on the main pipe before that pipe is laid.
C Approved cut-in tool shall be used for field made connections.
D All dimensions are in millimetres unless otherwise shown.

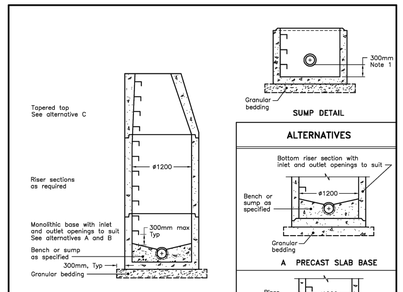
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2021	Rev 4
SEWER SERVICE CONNECTIONS FOR MAIN PIPE SEWER		OPSD 1006.010



DRAINAGE DITCH(UNIT 4-5)DETAIL
N.T.S.

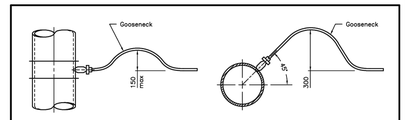


DIVERSION SWALE DETAIL
N.T.S.

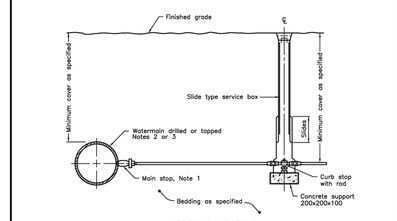


NOTES:
1 The sump is measured from the lowest invert.
A Granular backfill shall be placed to a minimum thickness of 300mm all around the maintenance hole.
B Precast concrete components shall be according to OPSD 701.030, 701.031, or 701.032.
C Structure exceeding 5.0m in depth shall include safety platform according to OPSD 404.020.
D Pipe support according to OPSD 708.020.
E For benching and pipe opening details, see OPSD 701.021.
F For adjustment unit and frame installation, see OPSD 704.010.
G All dimensions are nominal.
H All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2014	Rev 5
PRECAST CONCRETE MAINTENANCE HOLE 1200mm DIAMETER		OPSD 701.010



HORIZONTAL GOOSENECK VERTICAL GOOSENECK OPTION



VERTICAL SECTION

NOTES:
1 For plastic service pipes, install main stop at 15° above horizontal with a minimum 1.2m long gooseneck.
2 Direct tap ductile iron pipe with approved tool with standard AWWA inlet thread.
3 Service connections to plastic watermains shall be made using service saddles or factory made tees.
A When specified, the vertical gooseneck option shall be used.
B Couplings shall not be permitted unless the service length exceeds 20m between the main stop and curb stop.
C All water services shall be installed 90° to the longitudinal axis of the watermain.
D Backfill material within 500mm of service box shall be native or imported, as specified.
E All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2018	Rev 4
WATER SERVICE CONNECTION 19 and 25mm DIAMETER SIZES		OPSD 1104.010

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KEY MAP NOTES

1. TOPOGRAPHIC SURVEY COMPLETED BY PINESTONE ENGINEERING LTD. NOVEMBER 2024.
2. LEGAL SUVERY COMPLETED BY CHAPPLE, GALBRAITH SURVEYORS LTD. FEBRUARY 2024.
3. EXISTING SANITARY INVERT ELEVATIONS FROM DISTRICT AS-BUILTS AND ARE CONSIDERED APPROXIMATE ONLY CONTRACTOR TO VERIFY IN THE FIELD.

BENCHMARK

TBM#1 TOP NUT OF HYDRANT
ELEVATION 227.56m

NO.	YY.MM.DD	REVISION	BY
1	26.05.01	REVISED PER TOWNSHIP COMMENTS	J.L.

SEAL

LICENSED PROFESSIONAL ENGINEER
D. P. HORDYK
100530028
2026-05-01
PROVINCE OF ONTARIO

NORTH ARROW

DESIGN BY:	J.V. D.H.
DRAWN BY:	J.L.
CHECKED	J.V.
DATE:	APRIL 2025
SCALE:	1:250

CLIENT/PROJECT

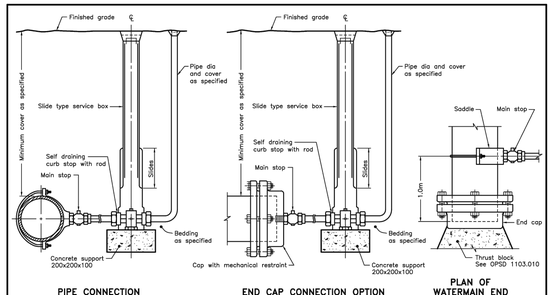
SILVER STREET TOWNHOMES
PORT CARLING

DRAWING TITLE

NOTES AND DETAILS PLAN

PROJECT NO.	DRAWING NO.	REVISION
24-11837M	DET-1	1

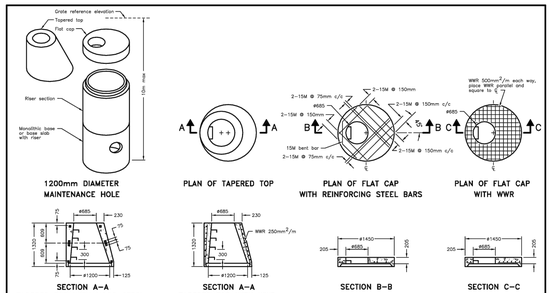
DWG NAME



PIPE CONNECTION | END CAP CONNECTION OPTION | PLAN OF WATERMAIN END

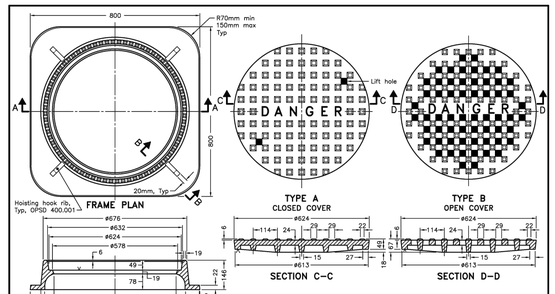
NOTES:
A Backfill material within 500mm of service box shall be native or imported, as specified.
B Refer to applicable regulations for end of pipe treatment.
C All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2018	Rev 3
BLOW OFF INSTALLATION		
	OPSD 1104.030	



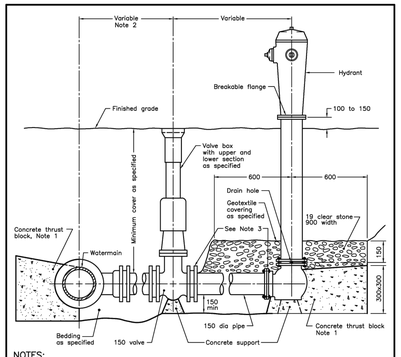
NOTES:
A This drawing shall be read in conjunction with OPSD 701.031 and 701.032.
B Centre reinforcing steel in riser ±20mm. All other reinforcing steel shall have 25mm minimum cover.
C Steps shall be according to OPSD 405.010 or 405.020.
D All dimensions are nominal.
E All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2014	Rev 4
PRECAST CONCRETE MAINTENANCE HOLE COMPONENTS 1200mm DIAMETER TAPERED TOP AND FLAT CAP		
	OPSD 701.030	



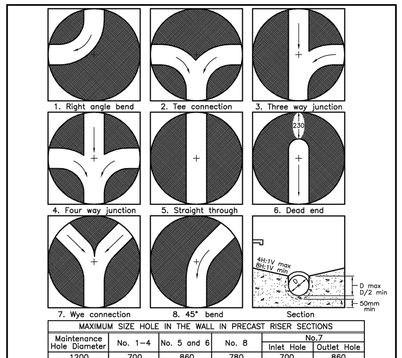
NOTES:
A Covers shall be Type A or Type B, as specified.
B All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2018	Rev 4
CAST IRON, SQUARE FRAME WITH CIRCULAR CLOSED OR OPEN COVER FOR MAINTENANCE HOLES		
	OPSD 401.010	



NOTES:
1 All concrete thrust blocks shall be poured against undisturbed ground.
2 When specified, for watermains 400mm and less, locate valve within 1.0m of centreline of watermain. Retaining and restraining devices shall be utilized. For watermains 600mm and over, bolt valve with flanged end directly to flanged tee.
3 Retaining and restraining devices shall be as specified.
A Bond breaker shall be used between the concrete and the fittings and appurtenances.
B Bolts and nuts for buried flange to flange connections shall be stainless steel.
C When required, flange of standpipe extensions shall not be in frost zone.
D This OPSD shall be read in conjunction with OPSD 1103.010 and 1103.020.
E Backfill material within 500mm of service box shall be native or imported, as specified.
F Tracer wire shall be installed as specified.
G All dimensions are in millimetres unless otherwise shown.

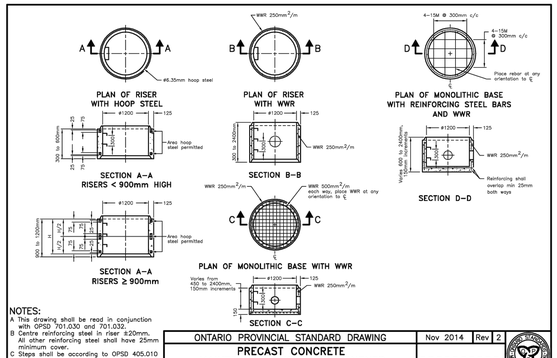
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2018	Rev 3
HYDRANT INSTALLATION		
	OPSD 1105.010	



MAXIMUM SIZE HOLE IN THE WALL IN PRECAST RISER SECTIONS					
Maintenance Hole Diameter	No. 1–4	No. 5 and 6	No. 8	No.7	
				Inlet Hole	Outlet Hole
1200	700	860	780	700	860
1500	860	1220	960	860	1170
1800	1220	1485	1220	1220	1485
2400	1485	2020	1760	1485	2020
3000	1930	2450	2300	1930	2450
3600	2470	3085	2730	2470	3085

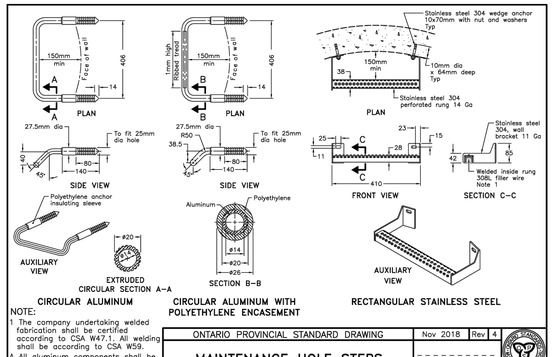
NOTES:
1 Slopes shall be maintained from the outlet hole opening for top of benching.
A Concrete for benching shall be 30MPa.
B When benching is hand-finished, it shall be given wood float finish, channel shall be given steel trowel finish.
C Benching slope and height shall be as specified.
D When specified, maintenance holes that are 1200mm in diameter with a uniform channel for 200 or 250mm pipe may be prebenched at the manufacturer with standardized benching slope and channel orientation.
E All dimensions are nominal.
F All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2014	Rev 4
MAINTENANCE HOLE BENCHING AND PIPE OPENING ALTERNATIVES		
	OPSD 701.021	



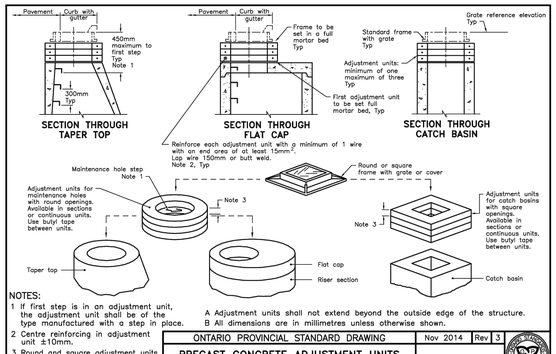
NOTES:
A This drawing shall be read in conjunction with OPSD 701.030 and 701.032.
B Centre reinforcing steel in riser ±20mm. All other reinforcing steel shall have 25mm minimum cover.
C Steps shall be according to OPSD 405.010 or 405.020.
D All dimensions are nominal.
E All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2014	Rev 2
PRECAST CONCRETE MAINTENANCE HOLE COMPONENTS 1200mm DIAMETER RISER AND MONOLITHIC BASE		
	OPSD 701.031	



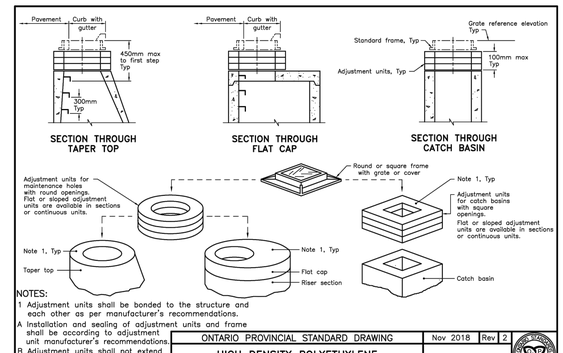
NOTE:
1 The company undertaking welded fabrication shall be certified according to CSA W47.1. All welding shall be according to CSA W59.
A All aluminum components shall be 6000 series structural aluminum.
B All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2018	Rev 4
MAINTENANCE HOLE STEPS HOLLOW		
	OPSD 405.010	



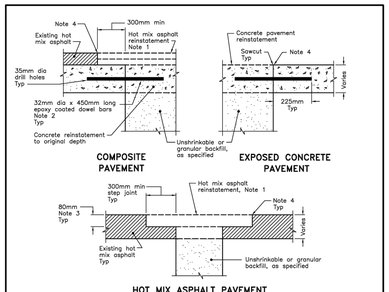
NOTES:
1 If first step is in an adjustment unit, the adjustment unit shall be of the type manufactured with a step in place.
2 Centre reinforcing in adjustment unit ±10mm.
3 Round and square adjustment units are available in sizes of 50, 75, 100, 150, and 300mm.
A Adjustment units shall not extend beyond the outside edge of the structure.
B All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2014	Rev 3
PRECAST CONCRETE ADJUSTMENT UNITS FOR MAINTENANCE HOLES, CATCH BASINS, AND VALVE CHAMBERS		
	OPSD 704.010	



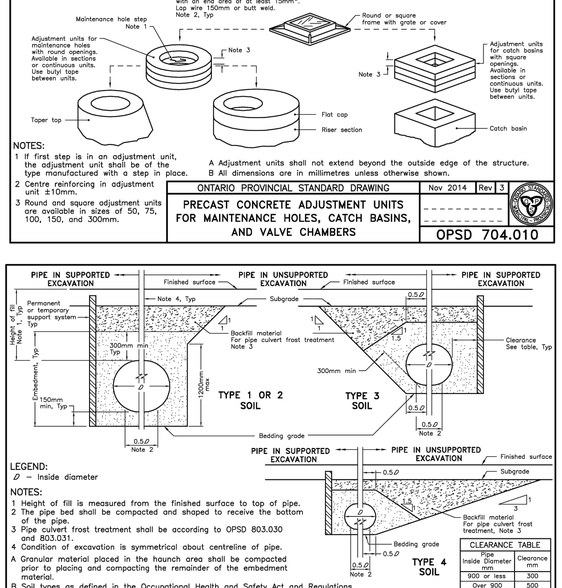
NOTES:
1 Adjustment units shall be bonded to the structure and each other as per manufacturer's recommendations.
A Installation and sealing of adjustment units and frame shall be according to adjustment unit manufacturer's recommendations.
B Adjustment units shall not extend beyond the outside edge of the structure.
C All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2018	Rev 2
HIGH DENSITY POLYETHYLENE ADJUSTMENT UNITS FOR MAINTENANCE HOLES, CATCH BASINS, AND VALVE CHAMBERS		
	OPSD 704.011	



NOTES:
1 Hot mix asphalt type and thickness as specified. The surface course shall not be less than 40mm.
2 Dowels shall be installed at 300mm intervals along all transverse faces. The dowel bars shall be placed mid–depth of the specified slab thickness and parallel to the longitudinal axis and the horizontal plane of the pavement within the following tolerances:
a) Vertical Alignment: ± 15mm along the length of the dowel bar.
b) Horizontal Alignment: ± 15mm along the length of the dowel bar.
c) Side Shift: The centre of the dowel bar shall lie within ± 40mm from the transverse joint.
Tie bars shall be installed at 600mm intervals along all longitudinal faces and shall be aligned perpendicular to the longitudinal axis of the pavement. The tie bars shall be installed within a tolerance of ± 15mm from the specified depth.
Where reinforcement is present, dowel and tie bars may be adjusted 25mm horizontally and raised or lowered 10mm to avoid drilling reinforcement.
All dowels and tie bars shall be set with epoxy grout.
3 If the total pavement thickness is less than 80mm, step joint is not required.
4 Joint treatment as specified.
A All dimensions are in millimetres unless otherwise shown.

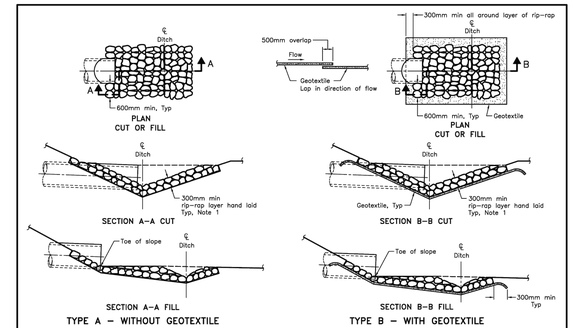
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2020	Rev 3
PAVEMENT REINSTATEMENT FOR UTILITY CUTS		
	OPSD 509.010	



LEGEND:
Ø – Inside diameter

NOTES:
1 Height of fill is measured from the finished surface to top of pipe.
2 The pipe bed shall be compacted and shaped to receive the bottom of the pipe.
3 Pipe culvert frost treatment shall be according to OPSD 803.030 and 803.031.
4 Condition of excavation is symmetrical about centreline of pipe.
A Granular material placed in the haunch area shall be compacted prior to placing and compacting the remainder of the embedment material.
B Soil types as defined in the Occupational Health and Safety Act and Regulations for Construction Projects.
C All dimensions are in metres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2014	Rev 3
FLEXIBLE PIPE EMBEDMENT AND BACKFILL EARTH EXCAVATION		
	OPSD 802.010	



NOTES:
1 The thickness of the rip–rap layer shall be at least 1.5 times the rip–rap mean diameter.
A All dimensions are in millimetres unless otherwise shown.

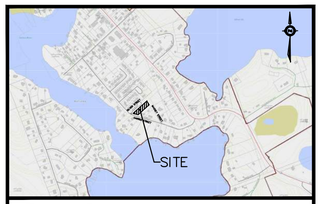
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2018	Rev 3
GENERAL RIP–RAP LAYOUT FOR SEWER AND CULVERT OUTLETS		
	OPSD 810.010	

PEL
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KEY MAP

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3. EXISTING SANITARY INVERT ELEVATIONS FROM DISTRICT AS–BUILTS AND ARE CONSIDERED APPROXIMATE ONLY CONTRACTOR TO VERIFY IN THE FIELD.

BENCHMARK

TBM#1 TOP NUT OF HYDRANT
ELEVATION 227.56m

NO.	YY.MM.DD	REVISION	BY
1	26.05.01	REVISED PER TOWNSHIP COMMENTS	J.L.

SEAL

LICENSED PROFESSIONAL ENGINEER
D. P. HORDYK
100530028
2026-05-01
PROVINCE OF ONTARIO

NORTH ARROW

DESIGN BY:	J.V. D.H.
DRAWN BY:	J.L.
CHECKED	J.V.
DATE:	APRIL 2025
SCALE:	1:250

CLIENT/PROJECT

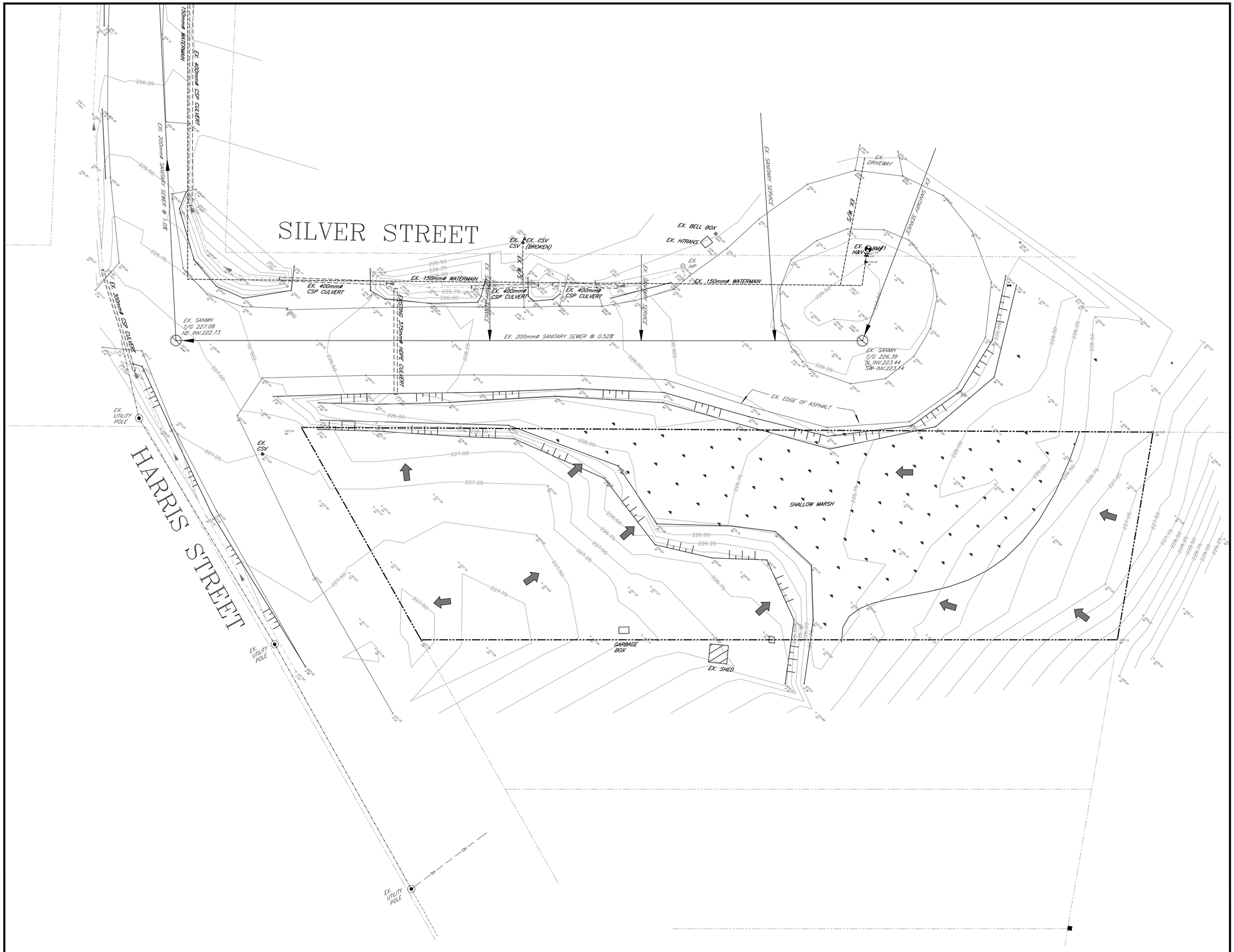
SILVER STREET TOWNHOMES
PORT CARLING

DRAWING TITLE

STANDARD DETAILS PLAN

PROJECT NO.	DRAWING NO.	REVISION
24-11837M	DET-2	1

DWG NAME



PEL

PINESTONE ENGINEERING LIMITED | www.pel.ca

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LEGEND

248.25	EXISTING CONTOUR
	EXISTING PROPERTY LINE
	EXISTING CATCHBASIN MANHOLE
	EXISTING CATCHBASIN
	EXISTING SANITARY MANHOLE
	EXISTING CURB STOP VALVE
	EXISTING HYDRANT AND VALVE
BELL	EXISTING BELL BOX
HYD	EXISTING HYDRO VAULT
	EXISTING STANDARD IRON BAR
	EXISTING FLOW
	EXISTING CENTRELINE OF DITCH
	EXISTING WATER SERVICING
	EXISTING SANITARY SERVICING

BENCHMARK

TBM#1 TOP NUT OF HYDRANT
ELEVATION 227.56m

NO.	YY.MM.DD	REVISION	BY
1	26.05.01	REVISED PER TOWNSHIP COMMENTS	J.L.

SEAL

LICENSED PROFESSIONAL ENGINEER
D. P. HORDYK
100530028
2026-05-01
PROVINCE OF ONTARIO

NORTH ARROW

DESIGN BY:	J.V. D.H.
DRAWN BY:	J.L.
CHECKED	J.V.
DATE:	APRIL 2025
SCALE:	1: 200

CLIENT/PROJECT

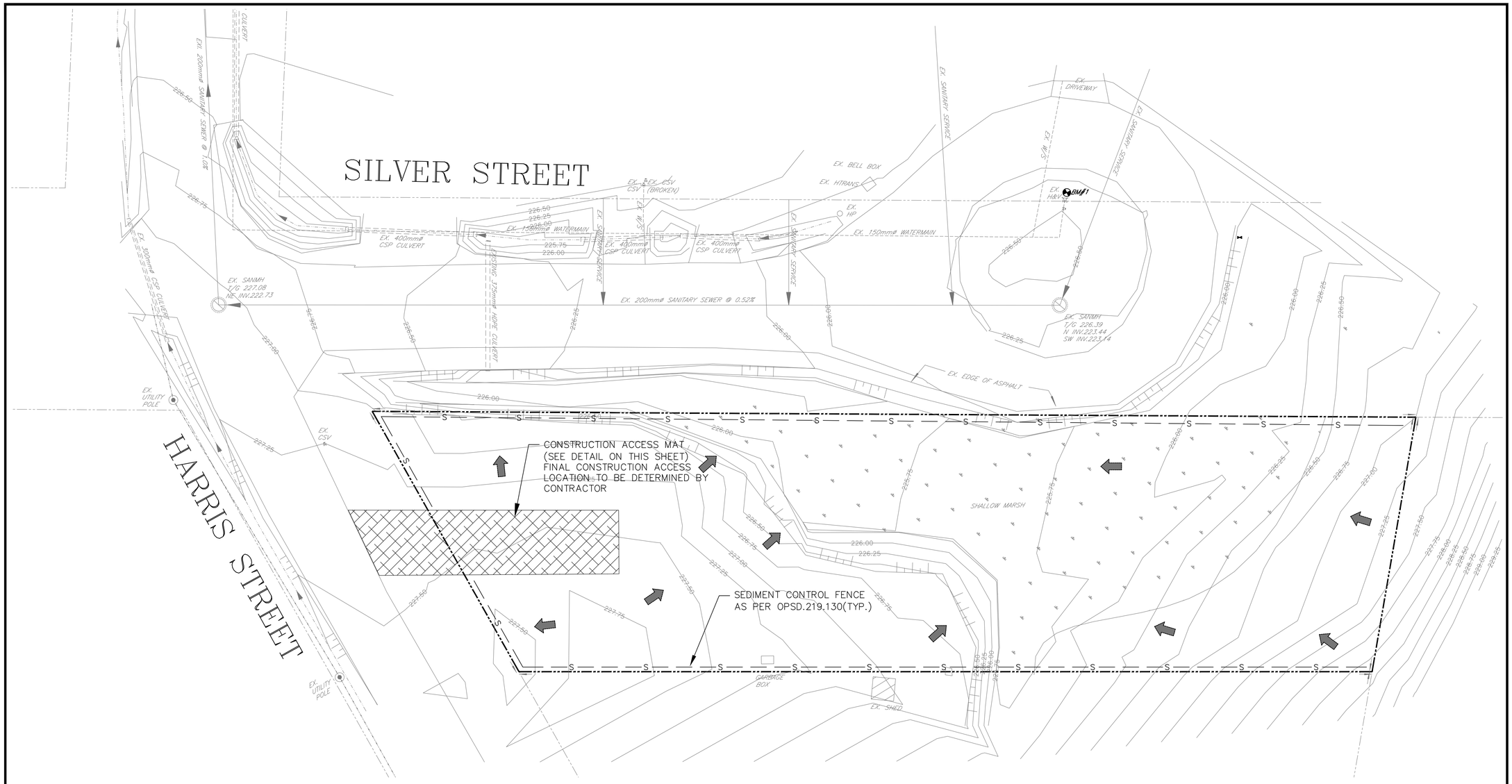
SILVER STREET TOWNHOMES
PORT CARLING

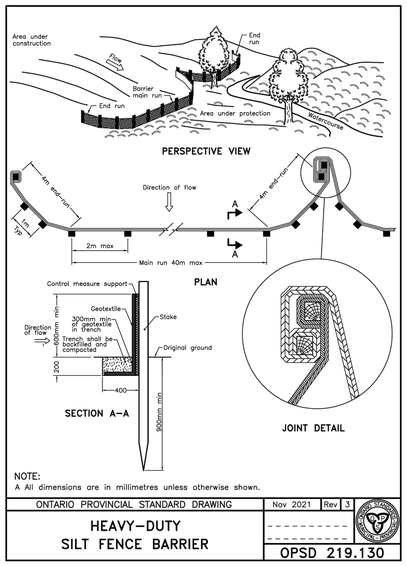
DRAWING TITLE

EXISTING CONDITIONS PLAN

PROJECT NO.	DRAWING NO.	REVISION
24-11837M	EX-1	1

DWG NAME



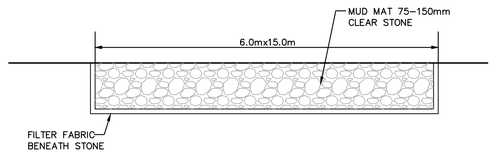


NOTE:
A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2021	Rev 3
HEAVY-DUTY SILT FENCE BARRIER		OPSD 219.130

EROSION CONTROL NOTES:

1. All silt fencing to be installed prior to any grading or excavation.
2. Erosion control fencing to be installed around the base of all stockpiles.
3. Additional erosion control measures may be required as site development progresses. Contractor to provide all additional erosion control structures as directed by the engineer.
4. Pinestone Engineering Ltd. to monitor erosion control structures to ensure fencing is installed and maintenance is performed to municipal requirements.
5. Erosion control structures to be monitored regularly and any damage repaired immediately. Sediments to be removed when accumulations reach a maximum of 1/2 the height of the fence.
6. All erosion control structures to remain in place until all disturbed ground have been re-stabilized either by paving or restoration of vegetative ground cover.
7. No alternate methods of erosion protection shall be permitted unless approved Pinestone Engineering Ltd. and the Township of Muskoka Lakes department of public works.
8. Contractor is responsible for municipal roadway to be cleared of all sediments from vehicular tracking etc. at the end of each day.



CONSTRUCTION ACCESS DETAIL

NTS

DESIGNATED ACCESS FOR ALL CONSTRUCTION TRAFFIC

INSTALL 'MUD MAT', AS PER DETAIL BELOW, PRIOR TO ANY OTHER CONSTRUCTION. MAT TO BE MAINTAINED IN GOOD WORKING ORDER UNTIL GRADING WORKS AREA COMPLETED AND GRANULAR "A" AND "B" HAVE BEEN PLACED.

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LEGEND

- 248.25 — EXISTING CONTOUR
- EXISTING PROPERTY LINE
- EXISTING CATCHBASIN MANHOLE
- EXISTING CATCHBASIN
- EXISTING SANITARY MANHOLE
- EXISTING CURB STOP VALVE
- EXISTING HYDRANT AND VALVE
- EXISTING BELL BOX
- HV — EXISTING HYDRO VAULT
- SIB ■ — EXISTING STANDARD IRON BAR
- IB □ — EXISTING IRON BAR
- EXISTING CENTRELINE OF DITCH
- EXISTING WATER SERVICING
- EXISTING SANITARY SERVICING
- CONSTRUCTION MUDMAT
- S —— S — SILT FENCE

BENCHMARK

TBM#1 TOP NUT OF HYDRANT
ELEVATION 227.56m

NO.	YY.MM.DD	REVISION	BY
1	26.05.01	REVISED PER TOWNSHIP COMMENTS	J.L.

SEAL

LICENSED PROFESSIONAL ENGINEER
D. P. HORDYK
100530028
2026-05-01
PROVINCE OF ONTARIO

NORTH ARROW

DESIGN BY:	J.V. D.H.
DRAWN BY:	J.L.
CHECKED	J.V.
DATE:	APRIL 2025
SCALE:	1:200

CLIENT/PROJECT

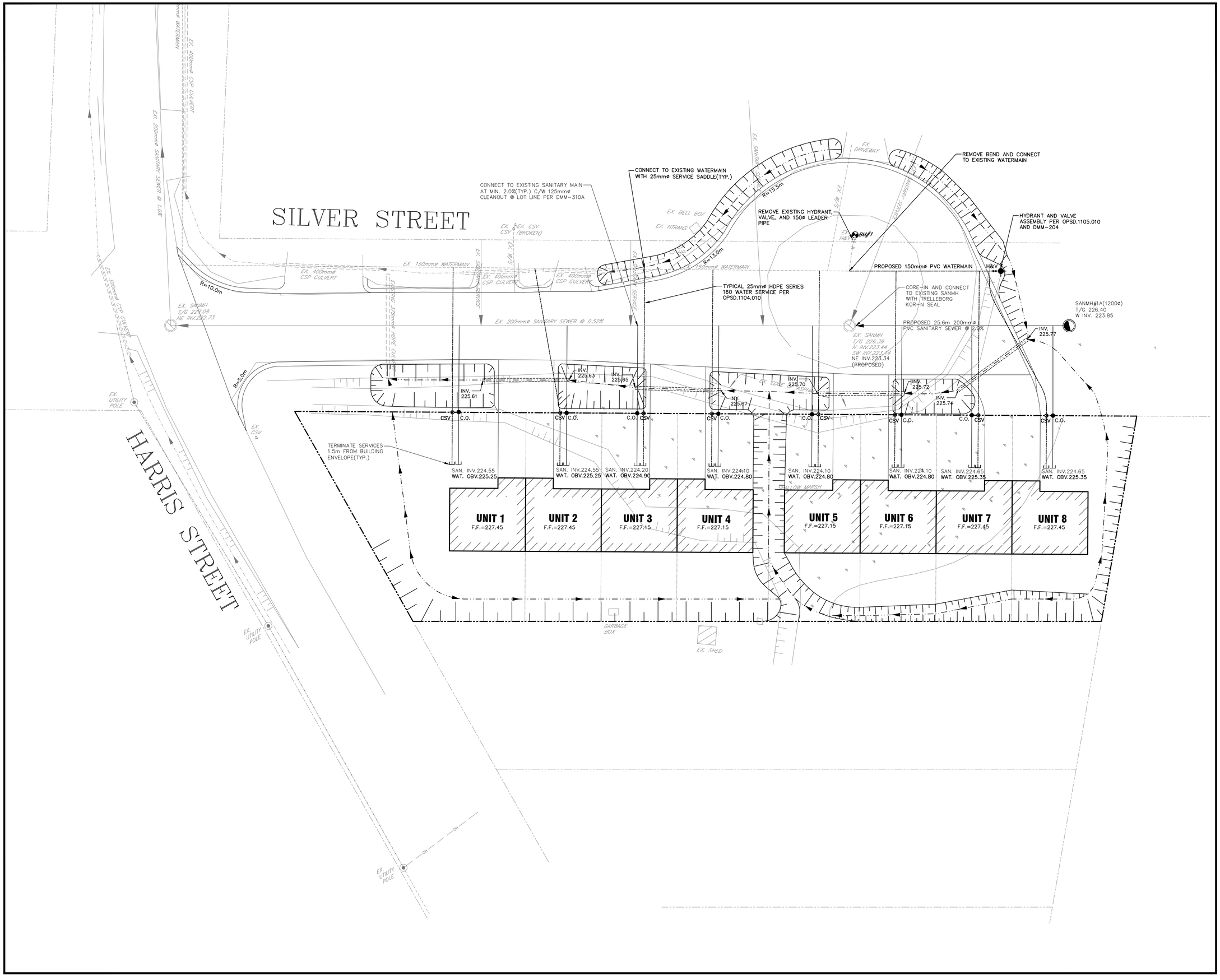
SILVER STREET TOWNHOMES
PORT CARLING

DRAWING TITLE

EROSION AND SEDIMENT CONTROL PLAN

PROJECT NO.	DRAWING NO.	REVISION
24-11837M	ESC-1	1

DWG NAME

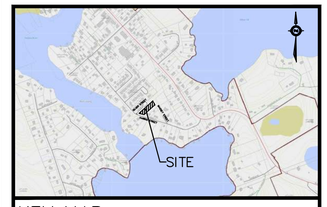


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- HV — EXISTING HYDRO VAULT
- EXISTING CENTRELINE OF DITCH
- EXISTING WATER SERVICING
- EXISTING SANITARY SERVICING
- PROPOSED SANITARY MANHOLE
- CSV ⊗ PROPOSED CURB STOP VALVE
- C.O. ● PROPOSED SANITARY CLEANOUT

BENCHMARK

TBM#1 TOP NUT OF HYDRANT
ELEVATION 227.56m

NO.	YY.MM.DD	REVISION	BY
1	26.05.01	REVISED PER TOWNSHIP COMMENTS	J.L.

SEAL

LICENSED PROFESSIONAL ENGINEER
D. P. HORDYK
100530028
2026-05-01
PROVINCE OF ONTARIO

NORTH ARROW

DESIGN BY:	J.V. D.H.
DRAWN BY:	J.L.
CHECKED	J.V.
DATE:	APRIL 2025
SCALE:	1:200

CLIENT/PROJECT

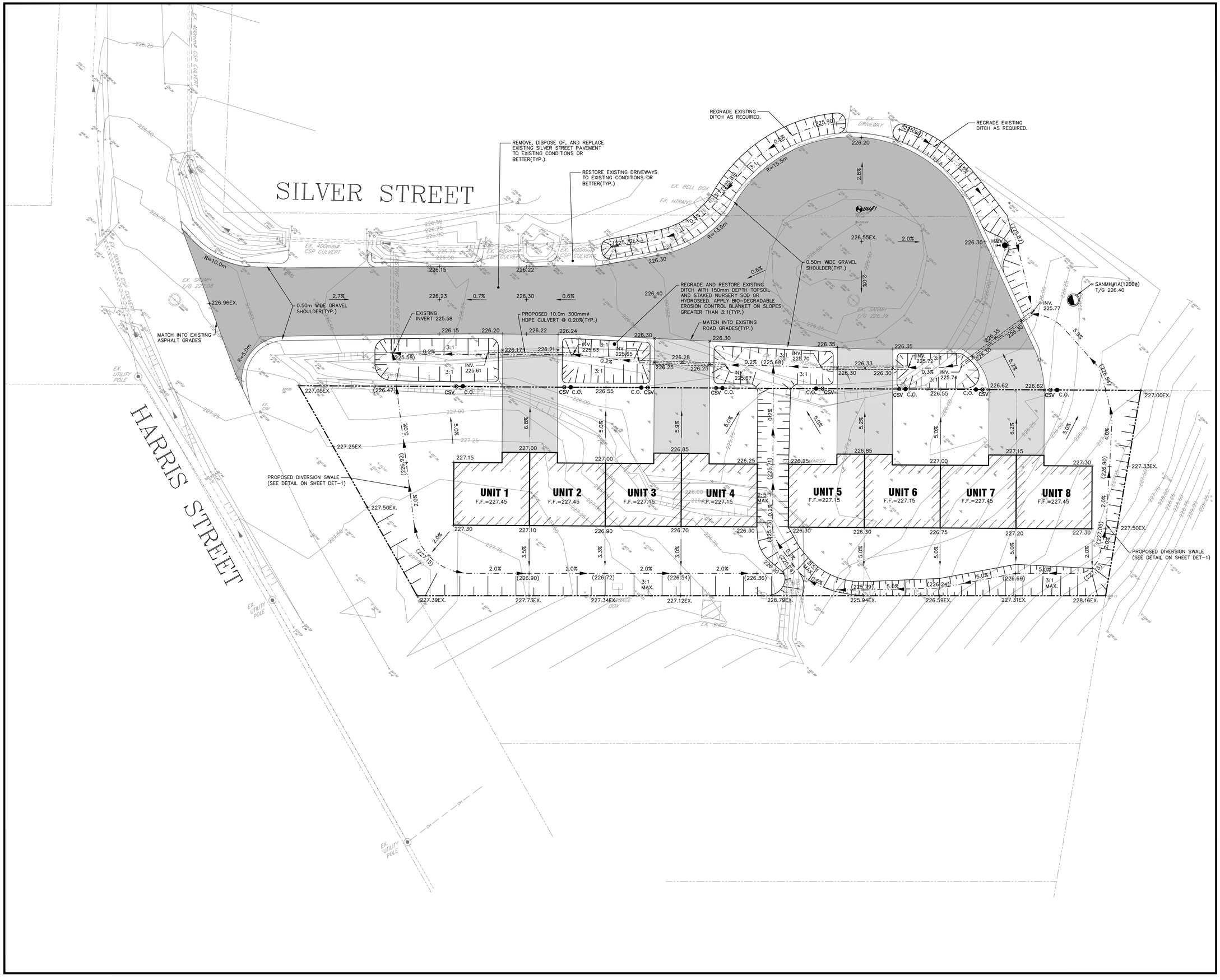
SILVER STREET TOWNHOMES
PORT CARLING

DRAWING TITLE

SITE SERVICING PLAN

PROJECT NO.	DRAWING NO.	REVISION
24-11837M	SERV-1	1

DWG NAME



The position of existing above ground and underground utilities and facilities are not necessarily shown on the drawings, and where shown, the accuracy of the position of such utilities and facilities is not guaranteed. Before starting work, the contractor shall confirm the exact location of all existing utilities and facilities, and shall assume all liability for damage to them

Drawings shall not be used for construction unless sealed and signed. All work to be performed in accordance with the Occupational Health & Safety Act 1990.

Any errors and/or omissions shall be reported to Pinestone Engineering Ltd. without delay.

KEY MAP

NOTES

1. TOPOGRAPHIC SURVEY COMPLETED BY PINESTONE ENGINEERING LTD. NOVEMBER 2024.
2. LEGAL SUVERY COMPLETED BY CHAPPLE, GALBRAITH SURVEYORS LTD. FEBRUARY 2024.
3. EXISTING SANITARY INVERT ELEVATIONS FROM DISTRICT AS-BUILTS AND ARE CONSIDERED APPROXIMATE ONLY CONTRACTOR TO VERIFY IN THE FIELD.

LEGEND

- 248.25 — EXISTING CONTOUR
- EXISTING PROPERTY LINE
- EXISTING CATCHBASIN MANHOLE
- EXISTING CATCHBASIN
- EXISTING SANITARY MANHOLE
- EXISTING CURB STOP VALVE
- EXISTING HYDRANT AND VALVE
- EXISTING BELL BOX
- HYDRO — EXISTING HYDRO VAULT
- x 245.00 — PROPOSED ELEVATION
- x 245.00EX. — EXISTING ELEVATION
- EXISTING CENTRELINE OF DITCH
- EXISTING WATER SERVICING
- EXISTING SANITARY SERVICING
- PROPOSED ASPHALT DRIVEWAY
- PROPOSED ASPHALT ROAD
- PROPOSED SANITARY MANHOLE
- CSV — PROPOSED CURB STOP VALVE
- C.O. — PROPOSED SANITARY CLEANOUT

BENCHMARK

TBM#1 TOP NUT OF HYDRANT
ELEVATION 227.56m

NO.	YY.MM.DD	REVISION	BY
1	26.05.01	REVISED PER TOWNSHIP COMMENTS	J.L.

SEAL

LICENSED PROFESSIONAL ENGINEER
D. P. HORDYK
100530228
2026-05-01
PROVINCE OF ONTARIO

NORTH ARROW

DESIGN BY:	J.V. D.H.
DRAWN BY:	J.L.
CHECKED	J.V.
DATE:	APRIL 2026
SCALE:	1:200

CLIENT/PROJECT

SILVER STREET TOWNHOMES
PORT CARLING

DRAWING TITLE

SITE GRADING PLAN

PROJECT NO.	DRAWING NO.	REVISION
24-11837M	GP-1	1

DWG NAME

GENERAL NOTES

1. All standards in accordance with current Ontario Provincial Standard Drawings (OPSD) and Ontario Provincial Standard Specifications (OPSS) unless otherwise noted.
2. All dimensions are in metres. Pipe sizes in millimetres unless otherwise noted.
3. Notify Bell Canada, Union Gas, Water and Sewer, Hydro and Cable Departments (where applicable) 72 hours prior to commencement for locates.
4. The Contractor shall coordinate the works with the Engineer who shall oversee the project on behalf of the owner.
5. All construction to be completed to the satisfaction of the Engineer.
6. All trenching to be in accordance with the Occupational Health and Safety Act.
7. All traffic control and signage to be in accordance with M.T.O. Book 7 requirements.
8. District of Muskoka, Township of Muskoka Lakes and Engineer to be notified at least 72 hours prior to construction.
9. Wherever pipes are passing through uncompacted fill areas, the bedding trench shall be excavated to the undisturbed ground level and backfilled with Granular 'A' compacted to 95% standard proctor density or as otherwise shown on the drawings.
10. Perform all blasting in accordance with the specification. Undertake pre-blast survey and provide copy to Engineer prior to commencement of blasting operations.
11. The location of underground and above ground utilities and structures shown on drawings is approximate only and may not be complete. The exact location of all utilities and structures shall be determined by consulting the Municipal authorities and Utilities companies concerned. The contractor shall prove the exact location of all utilities and structures before construction and shall be responsible for adequately protecting them against damage, assuming all liabilities for damage of such.
12. The Contractor must check and verify dimensions, obtain all utility locates, and obtain all required permits and licenses and verify existing service elevations before proceeding with any work.
13. Latest approved drawings to be used for construction and all discrepancies reported to the Engineer.
14. Drawings are not to be scaled.
15. All materials to be used on this project shall be lead free.
16. Pipe length as labeled is measured horizontally along pipe centre line and may differ from baseline chainage where baseline is not parallel to pipe.
17. Utilize erosion and siltation controls as necessary during construction to control sediment/silt runoff from the site.
18. Ensure accessibility to existing residential driveways at all times.
19. Ensure adequate protection to all culverts.
20. Building storm outlets are not to connect to the sanitary lateral and are to discharge to grade.

SANITARY SEWER NOTES

1. Work shall conform to OPSS.410 and the Ontario Building Code and DMM standards. Pipe embedment and backfill shall conform to OPSD 802.010 and 802.013. Pipe embedment material to springline shall consist of Granular "A" or 19mm diameter clear stone. Embedment from springline to 300mm above pipe shall consist of sand. Backfill to be approved native material or select material.
2. Sanitary sewer to be PVC SDR 35 200mmø. Trench backfill to road subgrade elevation shall consist of approved native material compacted to 95% SPD.
3. Sanitary sewer services to be PVC SDR 28 125mmø.
4. All manholes to be minimum 1200mm dia. precast with aluminum rungs at 300mm centers per OPSD.701.010, 405.010 and 401.010.
5. Provide water tight boot pipe-to-manholes connectors in sanitary manholes.
6. All manholes to be benched per OPSD 701.021
7. Sanitary sewers to be tested in accordance with OPSS 409 & 410. Pipes to be cleaned and flushed prior to the video inspection. Standing water test and sewer test to be completed in accordance with District of Muskoka's guidelines. District of Muskoka Staff to be present during standing water and sag limits test.
8. All frames/lids for manhole in roadways shall be 3 piece adjustable units such as Bibby (Autostable) C-50M-ONT(6"), Meuller "Adjustable" AJ633(152) or approved equivalent.
9. Sanitary sewers to be video inspected providing dvd(or USB) recording copy in triplicate (3) and report of inspection to the Engineer. Sewers are to be inspected once at initial acceptance and once at final assumption without defect.
10. Frost straps to be installed as per OPSD 701.100.
11. 30 days prior to both initial and final inspection, a video inspection and report shall be completed and presented to municipal staff. Method shall comply with District specifications.

WATERMAIN NOTES

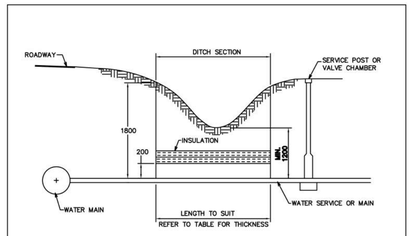
1. Work shall conform to OPSS. 441.
2. Install coated No. 12 gauge standard tracer wire on all watermains as per District Standards. Tracer wire at valve boxes to conform to DMM 213.
3. All watermains to have 1.8m minimum cover as shown on the drawings.
4. Unless noted otherwise, all watermains to be Class 235(DR 18) PVC material in accordance with AWWA C-900 Standard. Exterior of all uncoated D.I. fittings, valves, mechanical joint restraints & associated connections shall have denso petrolatum mastic and or tape applicator corrossion protection.
5. All dimensions are in metres. Pipe sizes are in millimetres unless otherwise noted.
6. Exact horizontal and vertical alignment of existing watermain at point of connection to be determined in the field.
7. Valve and Valve boxes to be installed accordance with OPSS. 441
8. Blow off assemblies to be in accordance with OPSD. 1104.030.
9. Vertical bend distances (DMM-201) are not indicated on drawings and are to be installed. as required. All watermain fittings tee's, bends, end caps etc. must comply with the District of Muskoka's approved product list.
10. Watermains located in fill shall be bedded on compacted Granular 'A' founded on native ground. Granular 'A' to be compacted to 95% SPD.
11. Watermains must be pressure tested, chlorinated, and pigged with foam swabs as indicated with latest revision of the Ontario Building code and in accordance with the District of Muskoka's approved standard operating procedure WS-09.
12. All gate valves shall be resilient seat type to AWWA C-509 Standards.
13. All water services to be 25mm dia. series 160 HDPE unless otherwise noted. Provide 1.8m cover for water services at ditch crossings. Service saddles shall be all stainless steel, double-bolt and fully gasketed(Robar 2616 Boss Pad, or Cambridge Brass 8403PG). Pipe embedment and backfill shall conform to OPSD 802.010 and 802.013. Pipe embedment material to springline shall consist of Granular "A" or 19mm diameter clear stone. Embedment from springline to 300mm above pipe shall consist of sand. Trench backfill to road subgrade elevation shall consist of approved native material compacted to 95% SPD.
14. Watermain bedding shall be Granular 'A' to OPSD-802.010.
15. Vertical and horizontal bends in watermain can be achieved by deflections at joints and radius of curvature as per manufacturers specifications unless otherwise noted.
16. Watermains with gradients 4:1 or greater to be anchored. Shop drawings to be submitted for approval.
17. For PVC pressure pipe with a SDR of 18, an 200mm(8") band width will be used for 19-25mm(3/4"-1") dia. services. A 300mm band width will be used for 37-50mm(11/2"-2") services.
18. For PVC pressure pipe with a SDR greater than 18, service saddle band width will be 300mm for 19-25mm dia. services and 450mm(16") for 37-50mm dia.
19. All curb stops shall be ball type with compression joint inlet and outlet, non draining, and lead free brass construction with blow out proof stainless steel stems and unfiled Teflon seats, rated for 300psi conforming to ANSI/AWWA C800-05 and NSF/ANSI 61. Refer to the District of Muskoka's approved product list.
20. Connections of newly constructed watermains to existing watermains in accordance with AWWA standard C651 and DMM SOP WS-40.
21. Where watermains cross under utilities the minimum clearance shall be 0.50m. Watermain crossings under storm sewers will require insulation. For a watermain crossing a sewer, watermain joints are to be offset a minimum of 2.5m horizontally from the centerline of the sanitary sewer and maintain 0.50m vertical separation.

CULVERTS NOTES

1. Culverts shall be smooth wall 320KPa HDPE per BOSS 2000 with bell & spigot joint. Pipe embedment and backfill shall conform to OPSD 802.010 and 802.013. Pipe embedment material to springline shall consist of Granular "A" or 19mm diameter clear stone. Embedment from springline to 300mm above pipe shall consist of sand. Trench backfill to road subgrade elevation shall consist of approved native material compacted to 95% SPD.
2. Frost tapers at culverts to be per OPSD 803.030.
3. Roof drains are not to be connected to sanitary sewer system.

RESTORATION AND ROAD CONSTRUCTION NOTES

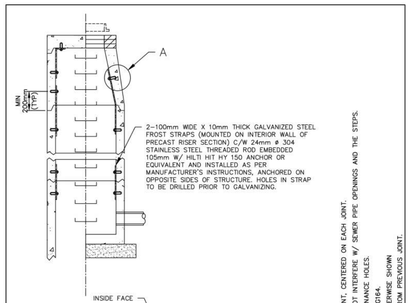
1. Reinstate roads to previous condition or better, where disturbed by construction activity.
2. Contractor to restore driveways and ditch work in areas disturbed by construction to equal or better conditions.
3. Minimum gravel driveway restoration to be 200mm, Granular 'A'. Asphalt Driveway restoration to be 50mm of HL3 on existing gravel subgrade.
4. All grassed areas disturbed during construction shall be restored with 150mm topsoil and sod or hydro mulched as per OPSS 507. Maintain until established.
5. All restoration work to be completed to the satisfaction of the Engineer.
6. Driveways to be constructed with 150mm Depth Granular 'A' and 50mm Depth HL 3 Asphalt.



INSULATION REFERENCE TABLE	
EFFECTIVE EARTH COVER	STYROFOAM SM HI-35 REQUIRED THICKNESS
1800 TO 1250mm	50mm
1250 TO 900mm	75mm

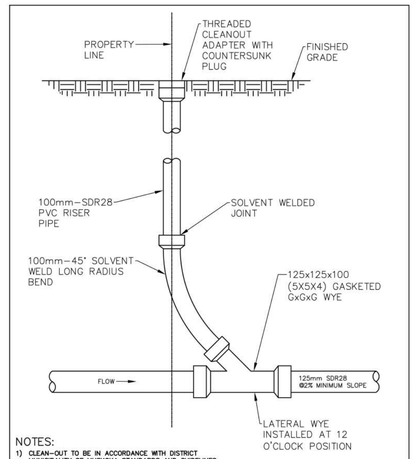
NOTES:
1. THE INSULATION SHALL BE MINIMUM 1200 WIDE AND SHALL BE CENTERED OVER THE PIPE.
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE NOTED.

THE DISTRICT MUNICIPALITY OF MUSKOKA	WATER MAIN INSULATION IN DITCHED AREAS	NOT TO SCALE DATE: JUNE 2024 DMM-212



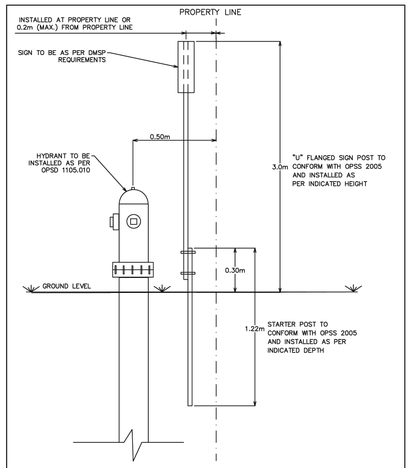
NOTES:
1. FROST STRAPS SHALL BE INSTALLED AT EACH JOINT, CENTERED ON EACH JOINT.
2. FROST STRAPS SHALL BE PLACED SO THEY DO NOT INTERFERE W/ SEWER PIPE OPENINGS AND THE STEPS.
3. FROST STRAPS SHALL BE PLACED ON ALL MAINTENANCE HOLES.
4. GALVANIZING SHALL BE ACCORDING TO CAN/CSA G164.
5. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN
6. EACH SET OF STRAPS TO BE VERTICAL OFFSET FROM PREVIOUS JOINT.

THE DISTRICT MUNICIPALITY OF MUSKOKA	FROST STRAP INSTALLATION - MONOLITHIC BASE	NOT TO SCALE DATE: JUNE 2024 DMM-309

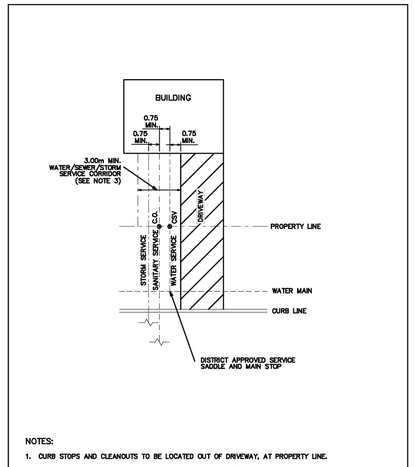


NOTES:
1) CLEAN-OUT TO BE IN ACCORDANCE WITH DISTRICT MUNICIPALITY OF MUSKOKA STANDARDS AND GUIDELINES.
2) CLEANOUT TO BE PROVIDED ON ALL SERVICES.
3) SEWER PIPE TO BE P.V.C SDR 28
4) BEDDING SHALL BE 19mm CLEAR STONE
5) ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED.

THE DISTRICT MUNICIPALITY OF MUSKOKA	SEWER CLEANOUT	NOT TO SCALE DATE: JUNE 2024 DMM-310A

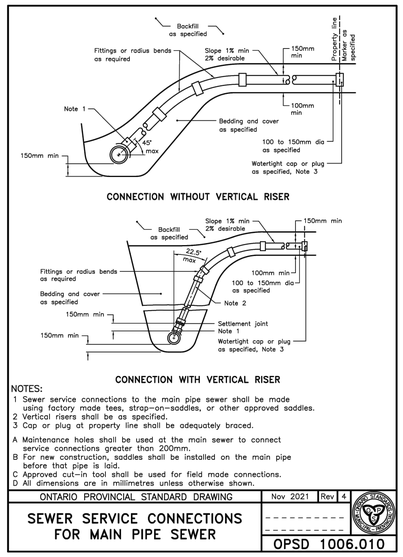


THE DISTRICT MUNICIPALITY OF MUSKOKA	FIRE HYDRANT MARKER INSTALLATION	NOT TO SCALE DATE: JUNE 2024 DMM-204



NOTES:
1. CURB STOPS AND CLEANOUTS TO BE LOCATED OUT OF DRIVEWAY, AT PROPERTY LINE.
2. WATER AND SEWER SERVICES TO BE ON SIDE OF LOT OPPOSITE TO DRIVEWAY, WATER SERVICE NEAREST TO DRIVEWAY.
3. NO UTILITIES IN SERVICE CORRIDOR.

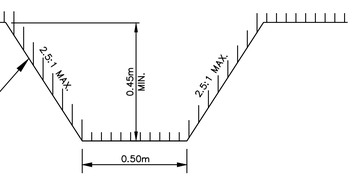
THE DISTRICT MUNICIPALITY OF MUSKOKA	LOT SERVICE LOCATIONS SINGLE FAMILY AND TOWNHOUSE RESIDENTIAL	NOT TO SCALE DATE: JUNE 2024 DMM-203



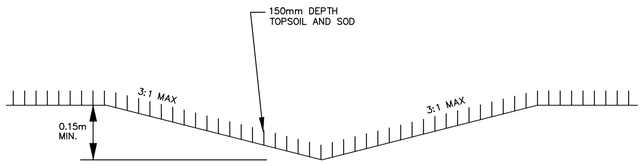
NOTES:
1 Sewer service connections to the main pipe sewer shall be made using factory made tees, strap-on-saddles, or other approved saddles.
2 Vertical risers shall be as specified.
3 Cap or plug at property line shall be adequately braced.

A Maintenance holes shall be used at the main sewer to connect service connections greater than 200mm.
B For new construction, saddles shall be installed on the main pipe before that pipe is laid.
C Approved cut-in tool shall be used for field made connections.
D All dimensions are in millimetres unless otherwise shown.

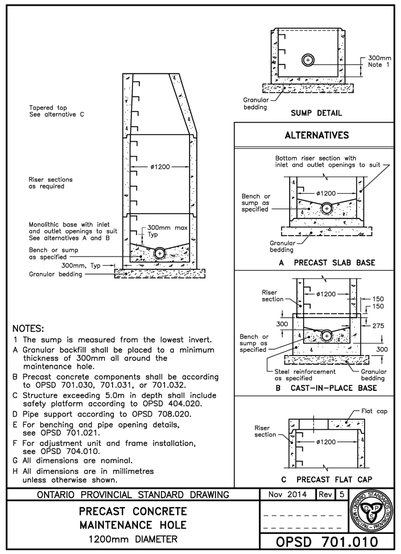
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2021	Rev 4
SEWER SERVICE CONNECTIONS FOR MAIN PIPE SEWER		OPSD 1006.010



DRAINAGE DITCH(UNIT 4-5)DETAIL
N.T.S.

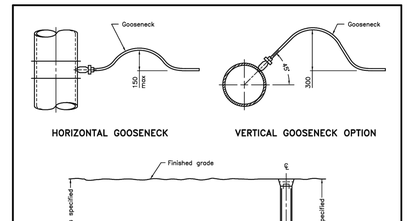


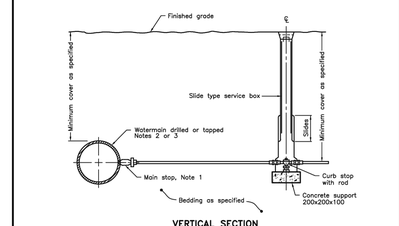
DIVERSION SWALE DETAIL
N.T.S.



NOTES:
1 The sump is measured from the lowest invert.
A Granular backfill shall be placed to a minimum thickness of 300mm all around the maintenance hole.
B Precast concrete components shall be according to OPSD 701.030, 701.031, or 701.032.
C Structure exceeding 5.0m in depth shall include safety platform according to OPSD 404.020.
D Pipe support according to OPSD 708.020.
E For benching and pipe opening details, see OPSD 701.021.
F For adjustment unit and frame installation, see OPSD 704.010.
G All dimensions are nominal.
H All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2014	Rev 5
PRECAST CONCRETE MAINTENANCE HOLE 1200mm DIAMETER		OPSD 701.010





NOTES:
1 For plastic service pipes, install main stop at 15° above horizontal with a minimum 1.2m long gooseneck.
2 Direct tap ductile iron pipe with approved tool with standard AWWA inlet thread.
3 Service connections to plastic watermains shall be made using service saddles or factory made tees.
A When specified, the vertical gooseneck option shall be used.
B Couplings shall not be permitted unless the service length exceeds 20m between the main stop and curb stop.
C All water services shall be installed 90° to the longitudinal axis of the watermain.
D Backfill material within 500mm of service box shall be native or imported, as specified.
E All dimensions are in millimetres unless otherwise shown.

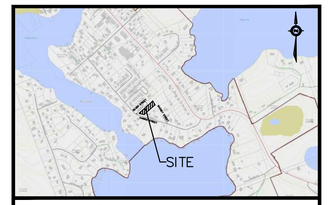
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2018	Rev 4
WATER SERVICE CONNECTION 19 and 25mm DIAMETER SIZES		OPSD 1104.010

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KEY MAP NOTES

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3. EXISTING SANITARY INVERT ELEVATIONS FROM DISTRICT AS-BUILTS AND ARE CONSIDERED APPROXIMATE ONLY CONTRACTOR TO VERIFY IN THE FIELD.

BENCHMARK

TBM#1 TOP NUT OF HYDRANT
ELEVATION 227.56m

NO.	YY.MM.DD	REVISION	BY
1	26.05.01	REVISED PER TOWNSHIP COMMENTS	J.L.

SEAL

LICENSED PROFESSIONAL ENGINEER
D. P. HORDYK
100530028
2026-05-01
PROVINCE OF ONTARIO

NORTH ARROW

DESIGN BY:	J.V. D.H.
DRAWN BY:	J.L.
CHECKED	J.V.
DATE:	APRIL 2025
SCALE:	1:250

CLIENT/PROJECT

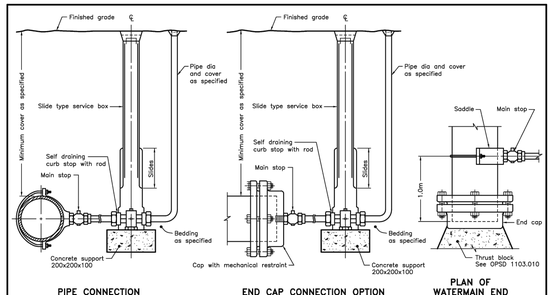
SILVER STREET TOWNHOMES
PORT CARLING

DRAWING TITLE

NOTES AND DETAILS PLAN

PROJECT NO.	DRAWING NO.	REVISION
24-11837M	DET-1	1

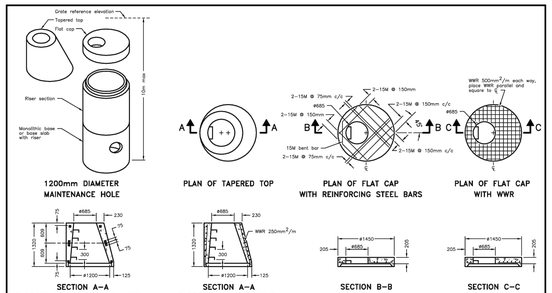
DWG NAME



PIPE CONNECTION | END CAP CONNECTION OPTION | PLAN OF WATERMAIN END

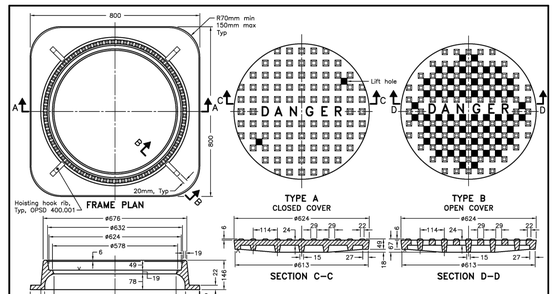
NOTES:
A Backfill material within 500mm of service box shall be native or imported, as specified.
B Refer to applicable regulations for end of pipe treatment.
C All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2018	Rev 3
BLOW OFF INSTALLATION		
	OPSD 1104.030	



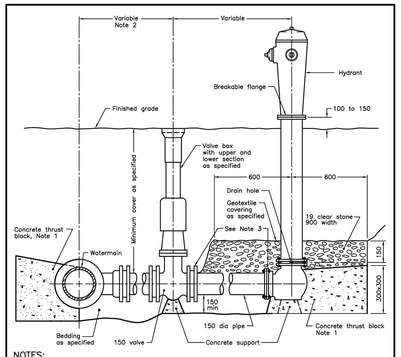
NOTES:
A This drawing shall be read in conjunction with OPSD 701.031 and 701.032.
B Centre reinforcing steel in riser ±20mm. All other reinforcing steel shall have 25mm minimum cover.
C Steps shall be according to OPSD 405.010 or 405.020.
D All dimensions are nominal.
E All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2014	Rev 4
PRECAST CONCRETE MAINTENANCE HOLE COMPONENTS 1200mm DIAMETER TAPERED TOP AND FLAT CAP		
	OPSD 701.030	



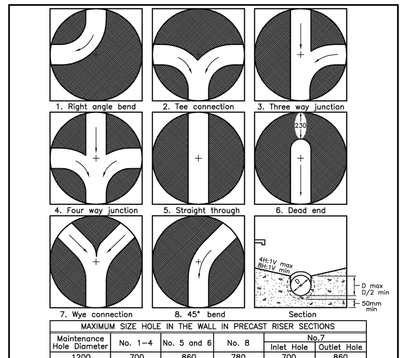
NOTES:
A Covers shall be Type A or Type B, as specified.
B All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2018	Rev 4
CAST IRON, SQUARE FRAME WITH CIRCULAR CLOSED OR OPEN COVER FOR MAINTENANCE HOLES		
	OPSD 401.010	



NOTES:
1 All concrete thrust blocks shall be poured against undisturbed ground.
2 When specified, for watermains 400mm and less, locate valve within 1.0m of centreline of watermain. Retaining and restraining devices shall be utilized. For watermains 600mm and over, bolt valve with flanged end directly to flanged tee.
3 Retaining and restraining devices shall be as specified.
A Bond breaker shall be used between the concrete and the fittings and appurtenances.
B Bolts and nuts for buried flange to flange connections shall be stainless steel.
C When required, flange of standpipe extensions shall not be in frost zone.
D This OPSD shall be read in conjunction with OPSD 1103.010 and 1103.020.
E Backfill material within 500mm of service box shall be native or imported, as specified.
F Tracer wire shall be installed as specified.
G All dimensions are in millimetres unless otherwise shown.

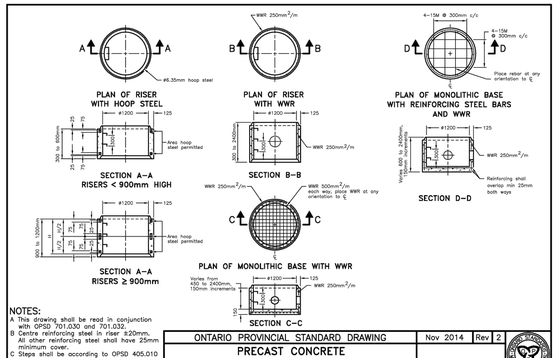
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2018	Rev 3
HYDRANT INSTALLATION		
	OPSD 1105.010	



MAXIMUM SIZE HOLE IN THE WALL IN PRECAST RISER SECTIONS					
Maintenance Hole Diameter	No. 1–4	No. 5 and 6	No. 8	No.7	
				Inlet Hole	Outlet Hole
1200	700	860	780	700	860
1500	860	1220	960	860	1170
1800	1220	1485	1220	1220	1485
2400	1485	2020	1760	1485	2020
3000	1930	2450	2300	1930	2450
3600	2470	3085	2730	2470	3085

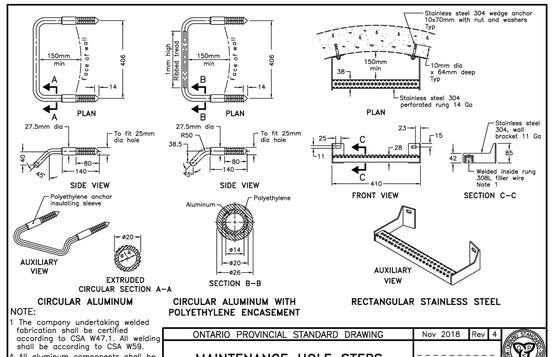
NOTES:
1 Slopes shall be maintained from the outlet hole opening for top of benching.
A Concrete for benching shall be 30MPa.
B When benching is hand-finished, it shall be given wood float finish, channel shall be given steel trowel finish.
C Benching slope and height shall be as specified.
D When specified, maintenance holes that are 1200mm in diameter with a uniform channel for 200 or 250mm pipe may be prebenched at the manufacturer with standardized benching slope and channel orientation.
E All dimensions are nominal.
F All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2014	Rev 4
MAINTENANCE HOLE BENCHING AND PIPE OPENING ALTERNATIVES		
	OPSD 701.021	



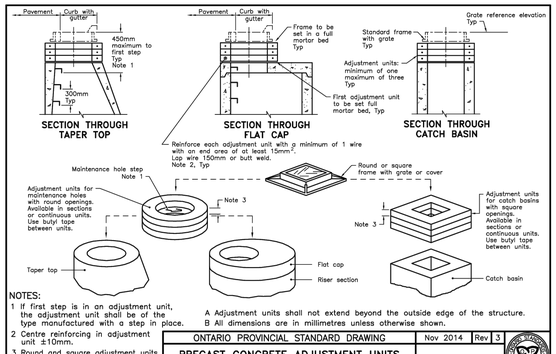
NOTES:
A This drawing shall be read in conjunction with OPSD 701.030 and 701.032.
B Centre reinforcing steel in riser ±20mm. All other reinforcing steel shall have 25mm minimum cover.
C Steps shall be according to OPSD 405.010 or 405.020.
D All dimensions are nominal.
E All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2014	Rev 2
PRECAST CONCRETE MAINTENANCE HOLE COMPONENTS 1200mm DIAMETER RISER AND MONOLITHIC BASE		
	OPSD 701.031	



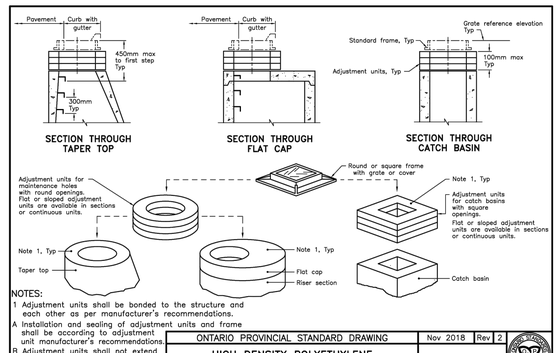
NOTE:
1 The company undertaking welded fabrication shall be certified according to CSA W47.1. All welding shall be according to CSA W59.
A All aluminum components shall be 6000 series structural aluminum.
B All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2018	Rev 4
MAINTENANCE HOLE STEPS HOLLOW		
	OPSD 405.010	



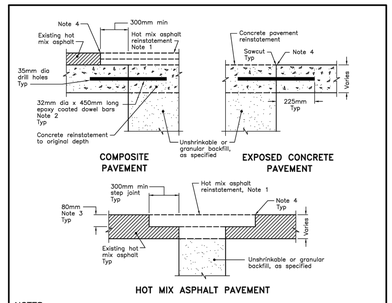
NOTES:
1 If first step is in an adjustment unit, the adjustment unit shall be of the type manufactured with a step in place.
2 Centre reinforcing in adjustment unit ±10mm.
3 Round and square adjustment units are available in sizes of 50, 75, 100, 150, and 300mm.
A Adjustment units shall not extend beyond the outside edge of the structure.
B All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2014	Rev 3
PRECAST CONCRETE ADJUSTMENT UNITS FOR MAINTENANCE HOLES, CATCH BASINS, AND VALVE CHAMBERS		
	OPSD 704.010	



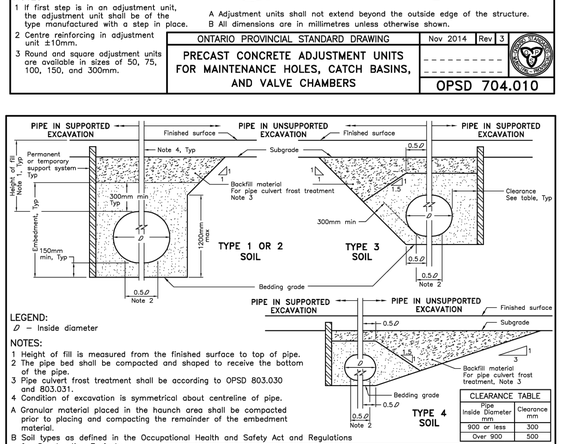
NOTES:
1 Adjustment units shall be bonded to the structure and each other as per manufacturer's recommendations.
A Installation and sealing of adjustment units and frame shall be according to adjustment unit manufacturer's recommendations.
B Adjustment units shall not extend beyond the outside edge of the structure.
C All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2018	Rev 2
HIGH DENSITY POLYETHYLENE ADJUSTMENT UNITS FOR MAINTENANCE HOLES, CATCH BASINS, AND VALVE CHAMBERS		
	OPSD 704.011	



NOTES:
1 Hot mix asphalt type and thickness as specified. The surface course shall not be less than 40mm.
2 Dowels shall be installed at 300mm intervals along all transverse faces. The dowel bars shall be placed mid-depth of the specified slab thickness and parallel to the longitudinal axis and the horizontal plane of the pavement within the following tolerances:
a) Vertical Alignment: ± 15mm along the length of the dowel bar.
b) Horizontal Alignment: ± 15mm along the length of the dowel bar.
c) Side Shift: The centre of the dowel bar shall lie within ± 40mm from the transverse joint.
Tie bars shall be installed at 600mm intervals along all longitudinal faces and shall be aligned perpendicular to the longitudinal axis of the pavement. The tie bars shall be installed within a tolerance of ± 15mm from the specified depth.
Where reinforcement is present, dowel and tie bars may be adjusted 25mm horizontally and raised or lowered 10mm to avoid drilling reinforcement.
All dowels and tie bars shall be set with epoxy grout.
3 If the total pavement thickness is less than 80mm, step joint is not required.
4 Joint treatment as specified.
A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2020	Rev 3
PAVEMENT REINSTATEMENT FOR UTILITY CUTS		
	OPSD 509.010	

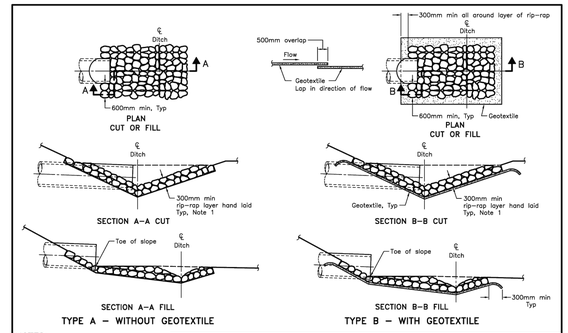


LEGEND:
Ø – Inside diameter

NOTES:
1 Height of fill is measured from the finished surface to top of pipe.
2 The pipe bed shall be compacted and shaped to receive the bottom of the pipe.
3 Pipe culvert frost treatment shall be according to OPSD 803.030 and 803.031.
4 Condition of excavation is symmetrical about centreline of pipe.
A Granular material placed in the haunch area shall be compacted prior to placing and compacting the remainder of the embedment material.
B Soil types as defined in the Occupational Health and Safety Act and Regulations for Construction Projects.
C All dimensions are in metres unless otherwise shown.

CLEARANCE TABLE	
Pipe Inside Diameter mm	Clearance mm
900 or less	300
Over 900	500

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2014	Rev 3
FLEXIBLE PIPE EMBEDMENT AND BACKFILL EARTH EXCAVATION		
	OPSD 802.010	



NOTES:
1 The thickness of the rip-rap layer shall be at least 1.5 times the rip-rap mean diameter.
A All dimensions are in millimetres unless otherwise shown.

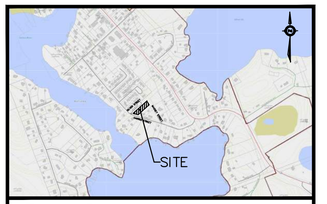
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2018	Rev 3
GENERAL RIP-RAP LAYOUT FOR SEWER AND CULVERT OUTLETS		
	OPSD 810.010	

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The position of existing above ground and underground utilities and facilities are not necessarily shown on the drawings, and where shown, the accuracy of the position of such utilities and facilities is not guaranteed. Before starting work, the contractor shall confirm the exact location of all existing utilities and facilities, and shall assume all liability for damage to them

Drawings shall not be used for construction unless sealed and signed. All work to be performed in accordance with the Occupational Health & Safety Act 1990.

Any errors and/or omissions shall be reported to Pinestone Engineering Ltd. without delay.



KEY MAP

NOTES
1. TOPOGRAPHIC SURVEY COMPLETED BY PINESTONE ENGINEERING LTD. NOVEMBER 2024.
2. LEGAL SUVERY COMPLETED BY CHAPPLE, GALBRAITH SURVEYORS LTD. FEBRUARY 2024.
3. EXISTING SANITARY INVERT ELEVATIONS FROM DISTRICT AS–BUILTS AND ARE CONSIDERED APPROXIMATE ONLY CONTRACTOR TO VERIFY IN THE FIELD.

BENCHMARK

TBM#1 TOP NUT OF HYDRANT
ELEVATION 227.56m

NO.	YY.MM.DD	REVISION	BY
1	26.05.01	REVISED PER TOWNSHIP COMMENTS	J.L.

SEAL

LICENSED PROFESSIONAL ENGINEER
D. P. HORDYK
100530028
2026-05-01
PROVINCE OF ONTARIO

NORTH ARROW

DESIGN BY:	J.V. D.H.
DRAWN BY:	J.L.
CHECKED	J.V.
DATE:	APRIL 2025
SCALE:	1:250

CLIENT/PROJECT

SILVER STREET TOWNHOMES
PORT CARLING

DRAWING TITLE

STANDARD DETAILS PLAN

PROJECT NO.	DRAWING NO.	REVISION
24-11837M	DET-2	1

DWG NAME