JLR No.: 31483-007 **May 1, 2025**

Prepared for:

THE TOWN OF MIDLAND
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Midland, ON
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Prepared by:

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Project File Report

Town of Midland
East Pressure Zone Municipal Class EA

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS

Table of Contents

List of Tables

List of Figures

List of Appendices

1.0 Introduction

1.1 Background

J.L. Richards & Associates Limited (JLR) has been retained by the Town of Midland (Town) to complete Phase 1 and 2 of a Municipal Class Environmental Assessment (Class EA) in the East Pressure Zone of the Town's Water System. The most recent Water Master Plan, completed in 2021 by Aecom, concluded that there is limited capacity in the East Pressure Zone and low pressure on Highway 12 South. The findings from Phase 1 of the Master Plan led to the proposed project of constructing a new water storage reservoir and booster pump station on the south side of Highway 12, west of Beamish Road. It was also proposed to decommission the Dominion and Montreal Standpipes based on performance.

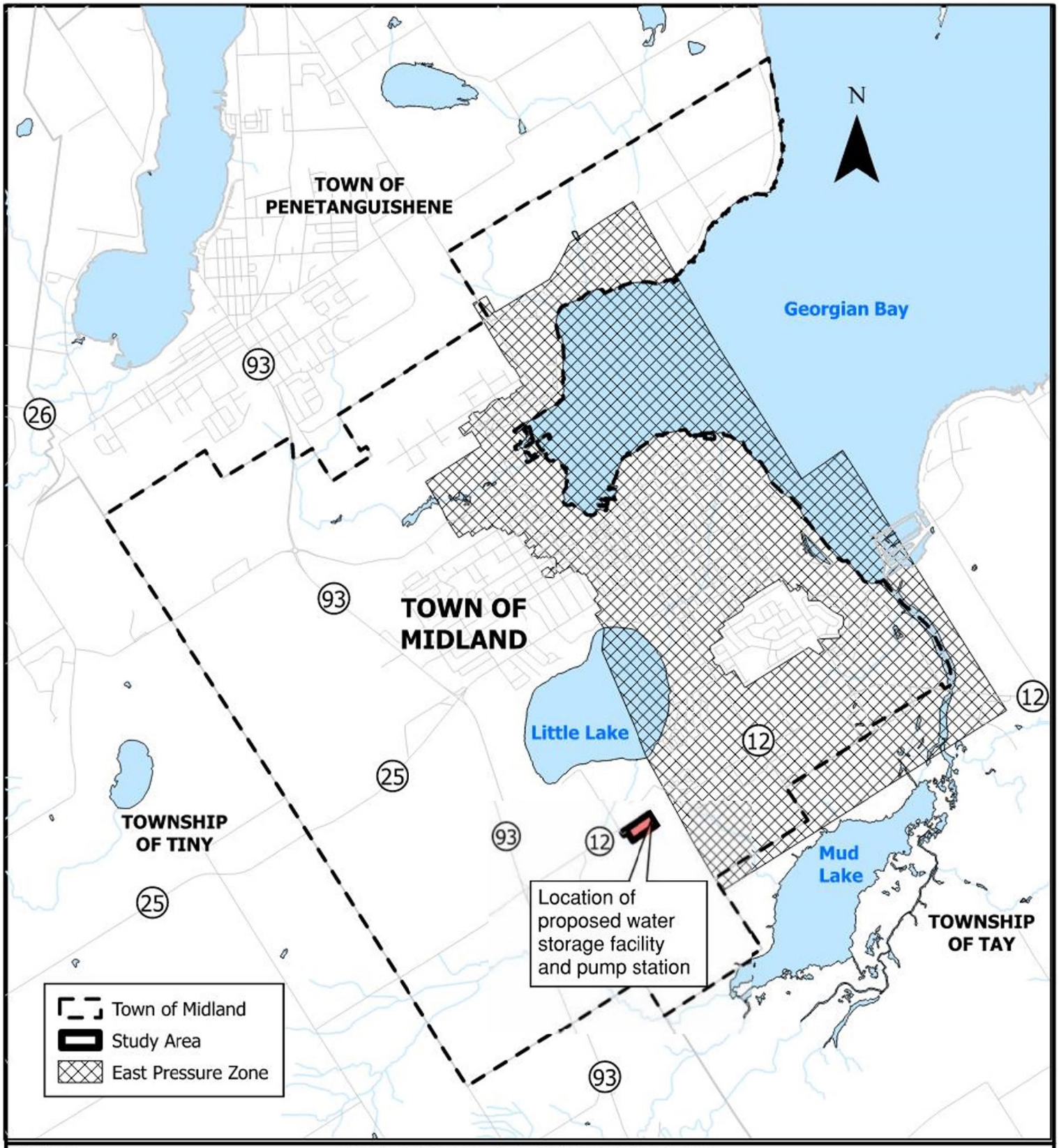
The purpose of this Class EA is to fulfil the requirements of a Schedule B Class EA for the proposed reservoir and booster pumping station. Phase 1 of the Class EA process will identify areas of constraint in the Town's water distribution infrastructure. Phase 2 will provide the Town with alternative design solutions to the issues previously identified in the 2021 Master Plan, as well as in Phase 1 of the Class EA.

1.2 Study Area Overview

The Town of Midland is situated on Georgian Bay in Simcoe County. According to the 2021 Census of Population conducted by Statistics Canada, Midland has a population of 17,817. The study boundary of the Class EA includes all areas where future infrastructure is proposed, as outlined in Figure 1. The Town's water distribution system consists of four (4) pressure zones: East, West, Sunnyside, and Lescaut. The East Pressure Zone is the largest and has the lowest hydraulic grade, using booster pumping stations to supply water to the other pressure zones. The East Pressure Zone has three (3) storage reservoirs, and the West Pressure Zone has two (2) storage reservoirs. Pressure zones Sunnyside and Lescaut have no floating storage and will therefore need to be included in the storage requirement calculations for the East Pressure Zone.

The East Pressure Zone, the largest of the four (4) zones, stretches from the east side of Young Street down to the southernmost boundary of the Town. Water infrastructure within the pressure zone includes the Highway 12 Treatment System, three (3) municipal wells, three (3) storage reservoirs, one (1) booster pumping station, and over 20 km of watermains. The area is zoned into areas of commercial, industrial, open space, and largely residential. Future growth includes new residential developments along Highway 12 and on Concession Road 2. Additionally, a new commercial complex is being planned on the south side of Highway 12.

The study area boundary is an approximately 1 ha property located south of Highway 12 and west of Beamish Road. The land is currently being leased for commercial use but is owned by the Town. Additionally, there is an existing 20 m wide utility corridor extending east towards Prospect Boulevard, wherein water distribution infrastructure could be added.



PROJECT:

MIDLAND EAST PRESSURE ZONE CLASS ENVIRONMENTAL ASSESSMENT

TOWN OF MIDLAND, ONTARIO

DRAWING:

STUDY AREA BOUNDARY

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JLR #:	31483-007

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FIGURE 1

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1.3 Phase 1 and 2 Report Objectives

The Project File Report summarizes the findings from the initial Phase 1 stages of the Municipal Class EA process and provides a basis for the identification of alternatives during Phase 2. Phase 2, also documented in the Project File Report, will evaluate various alternative solutions for recommended improvements in the Town's water distribution system.

The objectives of the Project File Report are to:

- Review planning forecasts to 2041 to identify servicing requirements.
- Summarize relevant information related to:
    - land use,
    - planning, and the
    - natural environment.
- Establish the Problem/Opportunity Statement.
- Identify alternative solutions and determine a preferred solution.
- Identify impacts and potential mitigation measures.
- Document public consultation undertakings and outcomes.

This MEA Class EA is being completed with sufficient detail to fulfill the requirements for Schedule 'B' projects.

1.4 Class Environmental Assessment Process

The Ontario Environmental Assessment Act (Act) sets out a planning and decision-making process to consider potential environmental effects before a project begins. The purpose of the Act is to provide for the protection and conservation of the natural environment (R.S.O. 1990, c.E.18, s.2).

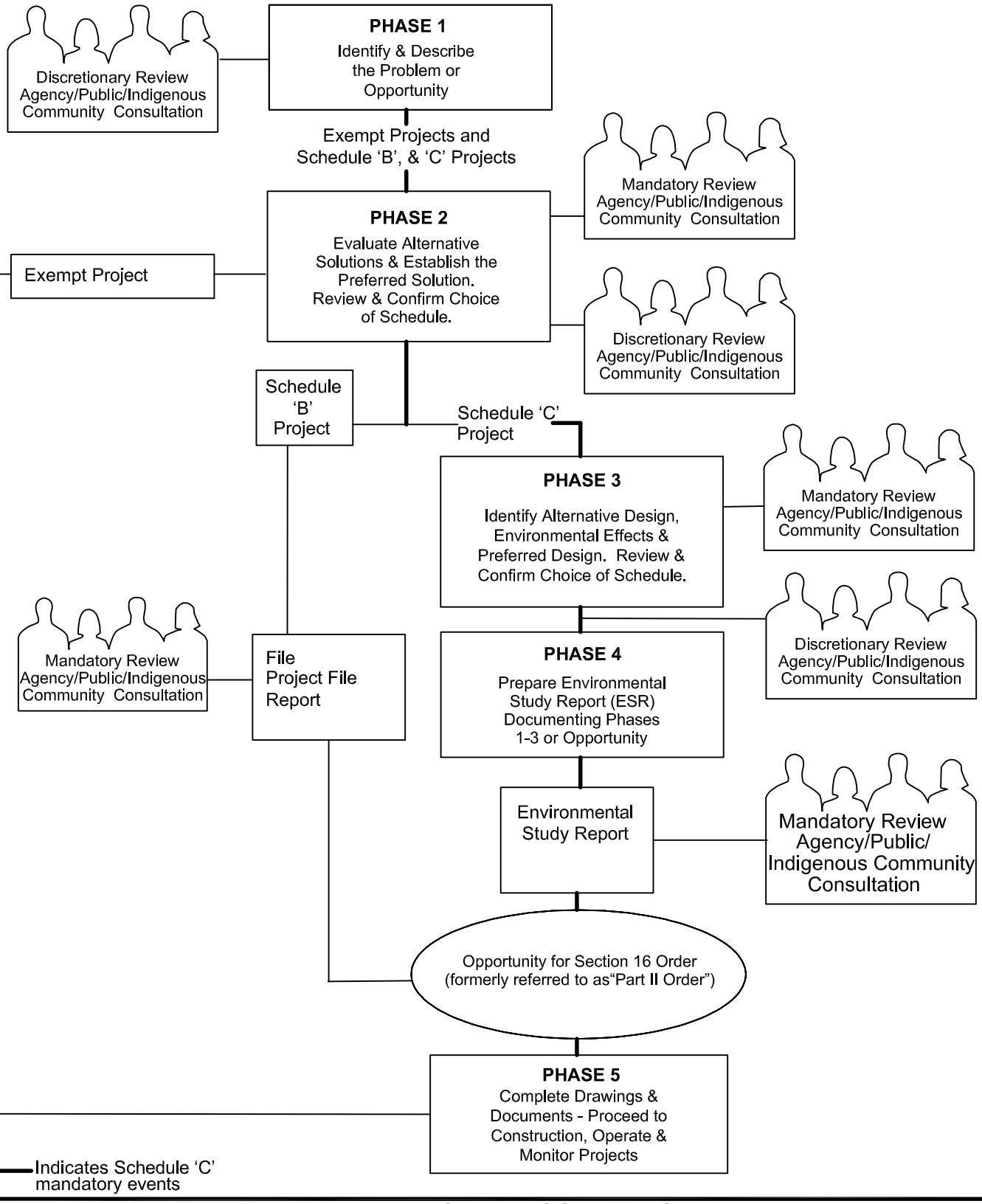
The Municipal Class EA process is followed for common types of projects to streamline the review process while ensuring that the project meets the requirements of the Act. In 1987, the first Class EA document prepared by the Municipal Engineers Association (MEA) on behalf of Ontario Municipalities was approved under the Act. Updates and amendments were subsequently made in 1993, 2000, 2007, 2011, 2015, 2023, and 2024.

Since projects may vary in their environmental impact, they are classified in terms of the following schedules, pursuant to the most recent amendment to the MCEA process in 2024:

- 'Exempt' projects, most of which were formerly classified as Schedule A and A+ projects, include various municipal maintenance, operational activities, rehabilitation works, minor reconstruction or replacement of existing facilities, and new facilities that are limited in scale and have minimal environmental effects. While these projects are exempt from the MCEA process, proponents should consider whether notice about the project should be given or consultation on the project should be carried out. Furthermore, proponents are also responsible for obtaining any other applicable permits, approvals, and authorizations for the project.
- 'Eligible for Screening to Exempt' projects may be eligible for exemption based on the results of a screening process. Proponents may choose to complete the applicable screening process to determine whether the project is eligible for exemption or proceed with the applicable Schedule 'B' or Schedule 'C' process, as noted below.

- Schedule ‘B’ projects have the potential for some adverse environmental impacts and therefore, the proponent is required to undertake the first two phases of the MCEA process. This includes mandatory consultation with Indigenous Communities, the public and other affected stakeholders as well as relevant review agencies; and the preparation of a Project File which documents the Class EA process and is placed on the public record for review and comment. If there are no outstanding concerns and the regulatory process has been completed, then the proponent may proceed to implement the project. Generally, these projects include improvements and minor expansions to existing facilities or smaller new projects.
- Schedule ‘C’ projects have the potential for greater environmental impacts and are subject to the full MCEA process. This includes mandatory consultation with Indigenous Communities, the public and other affected stakeholders as well as relevant review agencies; identifying, assessing, and refining alternative solutions to determine a preferred solution; and preparing the ESR which documents the Class EA process and is placed on the public record for review and comment. If there are no outstanding concerns and the regulatory process has been completed, then the proponent may proceed to implement the project. Generally, these projects include the construction of new facilities and major expansions to existing facilities.

This MEA Class EA is being completed with sufficient detail to fulfill the requirements for Schedule ‘B’ projects. For this Class EA, a Project File or Environmental Study Report will be made available for public and agency review at the completion of the Class EA process for a mandatory 30-day period. If there are no requests to the Minister of the Environment, Conservation and Parks (MECP) for a ‘Part II Order’ within the review period, then the project can proceed to implementation (Phase 5).



PROJECT:

MIDLAND EAST PRESSURE ZONE CLASS ENVIRONMENTAL ASSESSMENT

TOWN OF MIDLAND, ONTARIO

DRAWING:

CLASS ENVIRONMENTAL ASSESSMENT PROCESS

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DRAWING #: FIGURE 2

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1.5 MEA Reform and Impact to Class EA Schedule Identified in the Master Plan

Since completion of the Water Master Plan in 2018, the MEA has worked with the Ministry of Environment, Conservation, and Parks to update the Municipal Class EA Process. Multiple amendments and reform to the Class EA schedule were proposed and approved in 2021. The preferred design alternatives previously identified in the Water Master Plan have been separated into the corresponding MCEA schedules. As such, Table 1 summarizes the approximate MCEA obligations to be fulfilled for a project of this calibre.

Table 1 MCEA Obligation of Water Master Plan Alternatives

Project	Municipal Class EA Obligation				
	Project Description	Exempt	Eligible for Screening	Schedule B	Schedule C
Alternative 1A					
Decommission Montreal Standpipe	**7** Retire any water infrastructure facility (see Glossary for definition of Retirement)	X			
	• Decommissioning a standpipe would fall under retiring a water infrastructure facility. • The MCEA obligation for **7** is **exempt**. • Not eligible for Archaeological Screening Process (ASP).				
Decommission Dominion Standpipe	**7** Retire any water infrastructure facility (see Glossary for definition of Retirement)	X			
	• Decommissioning a standpipe would fall under retiring a water infrastructure facility. • The MCEA obligation for **7** is **exempt**. • Not eligible for Archaeological Screening Process (ASP).				
New Storage Tank	**6a** Replace/expand existing water storage facilities provided all such facilities are in either an existing road allowance or an existing utility corridor or where no land acquisition is required	X			
	6b Replace/expand existing water storage facilities, where additional land must be acquired			X	
	• Determination of MCEA Obligation being 6a or 6b will depend on if additional land must be acquired or not. • Should obligation **6b** be deemed as appropriate, activity will be a **Schedule B**. • Neither option eligible for an Archaeological Screening Process (ASP).				
Alternative 4A					
New BPS	**5d** Construct a new pumping station where the facility is not located in or adjacent to an environmentally sensitive natural area, residential or other sensitive land use, or on land with cultural heritage or archaeological potential		ASP	X	
	• Determination of MCEA Obligation being 5d will depend on if the facility will be located on sensitive land (i.e environmentally sensitive area, residential area, cultural heritage, archaeological potential, etc.). • Should obligation **5d** be deemed appropriate, activity will be a **Schedule B.** • Qualifies for Archaeological Screening Process (ASP).				
New Feedermain	**4c** Establish, extend or enlarge a water distribution system and all works necessary to connect the system to an existing system or water source, where such facilities **are not** in either an existing road allowance or an existing utility corridor			X	
	• All or part of the route is outside an existing road allowance/existing utility corridor along feedermain path. • Should obligation **4c** be deemed appropriate, activity will be a **Schedule B.** • Not eligible for Archaeological Screening Process (ASP).				

2.0 Planning and Policy Considerations

2.1 Provincial Planning and Regional Conservation Plans

The study area is currently subject to the 2024 Provincial Planning Statement (PPS)(Government of Ontario, 2024). The PPS is a streamlined framework that builds upon housing-supportive policies from the Provincial Policy Statement and the Growth Plan for the Greater Golden Horseshoe. The PPS was issued under section 3 of the *Planning Act*, and recognizes the complex relationships between the environmental, economic, health, and social factors in land use planning and supports a comprehensive, integrated and long-term approach to planning, recognizing linkages among policy areas. Alternatives in this MCEA will be assessed based on conformance with the 2024 Provincial Planning Statement.

2.2 Simcoe County Official Plan

The Simcoe County (County) Official Plan (SCOP) is, in part, the County's growth management strategy. It is closely linked with strategies for guiding growth and development while protecting the environment and agricultural lands, managing resources, and outlining a structure that supports complete communities. The SCOP sets out a broad County policy framework regarding development and land use within the County. The SCOP incorporates the basic planning policies of the Provincial Policy Statement, the Growth Plan for the GGH, and other Provincial policies, which the County administers on behalf of the Province of Ontario. The SCOP has been updated through several amendments, with the most recent being in February 2023.

In 2022, the County completed a Municipal Comprehensive Review (MCR) in accordance with the 2020 Growth Plan for the Greater Golden Horseshoe (Ontario, 2020). This update provided the basis for all upper and single-tier municipalities to change their Official Plans to be in conformity with the new policy. As such, the SCOP has been updated to include a planning horizon to 2051. OPA No. 7 was adopted by County Council on August 9, 2022, by By-law No. 6977. The province has now posted the County's Official Plan Amendment (OPA) No. 7 – Municipal Comprehensive Review Phase 1 Growth Management to the Environmental Registry of Ontario (ERO).

2.3 Town of Midland Official Plan

The Town's new Official Plan came into effect in February 2021. As outlined in the Official Plan the purpose of the document is to "set out a planning policy framework that provides direction for future growth and development within the Town of Midland". At the time the Town's Official Plan was approved, it was in conformity with the Provincial and upper-tier land use policy direction. The Official Plan addresses the Town's planning requirements to the year 2031 as it pre-dates the 2020 PPS and the 2020 Growth Plan.

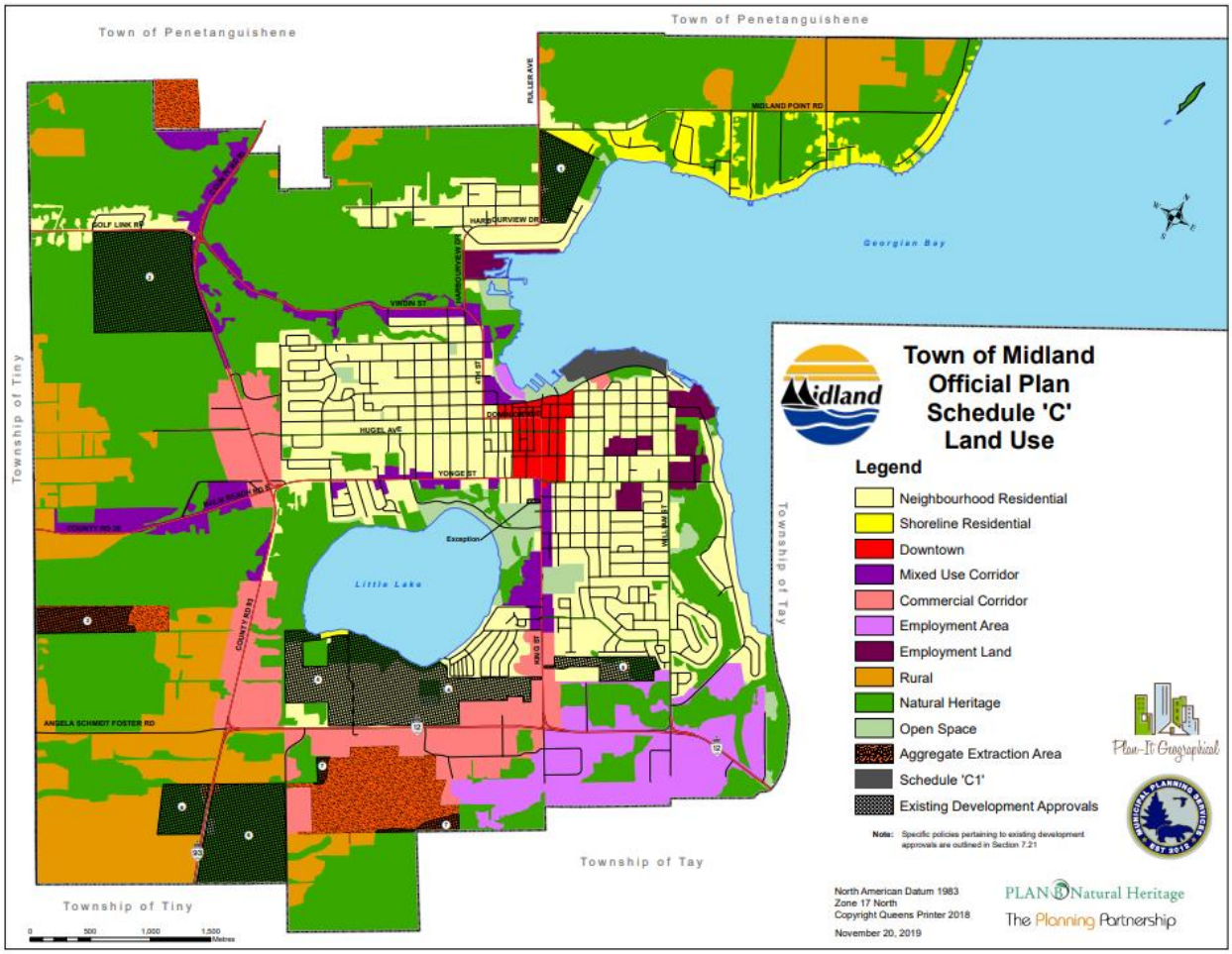


Figure 3 Town of Midland Official Plan Land Use Map

2.4 Source Protection Plans

The purpose of Source Protection Plans is to protect existing and future water sources in each source protection region. The South Georgian Bay Lake Simcoe Source Protection Plan is released on a regional basis after approval of the Minister of the Environment, Conservation and Parks (known as the Minister of the Environment and Climate Change in 2015). The Town of Midland is located in the South Georgian Bay Lake Simcoe Source Protection Region (SGBLS). The South Georgian Bay Lake Simcoe Region's Source Protection Plan (SPP) originally took effect on July 1, 2015. The SGBLS SPP has seen several amendments since it came into effect, including updates in 2017, 2018, 2019, 2021, 2022, 2023, and 2024.

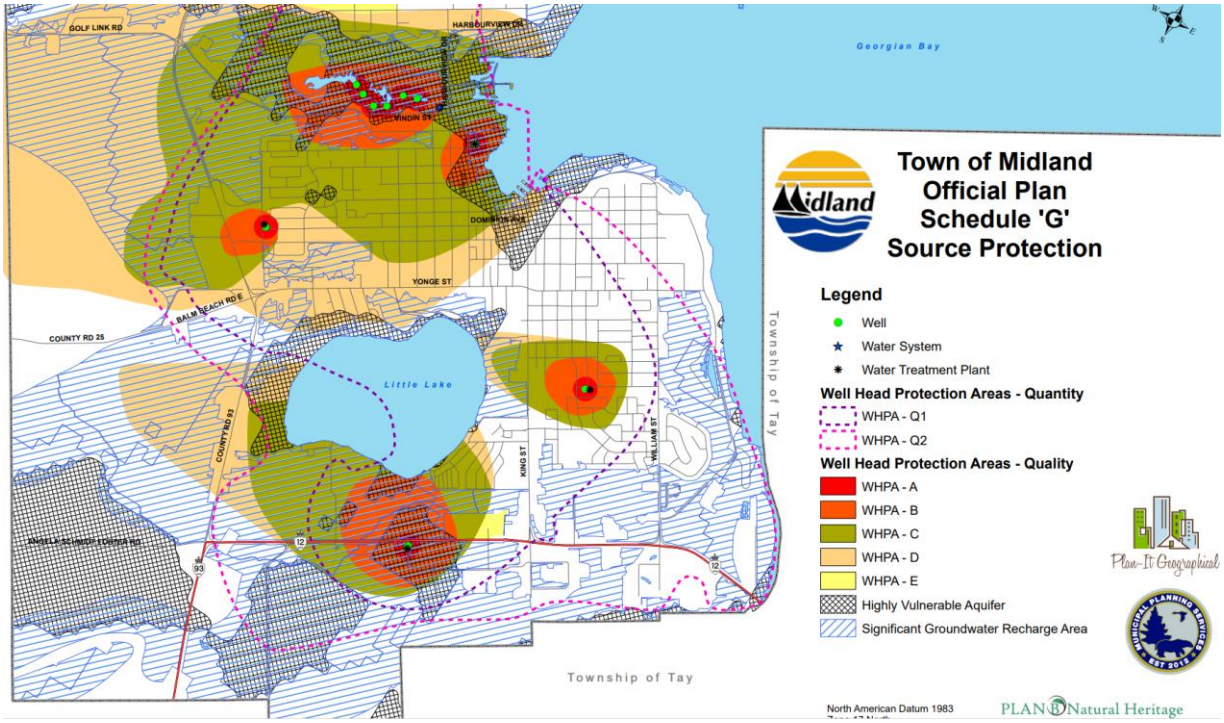


Figure 4 Town of Midland Official Plan Source Protection Map

2.5 Other Planning Policies

The study area is not subject to the Oak Ridges Moraine Conservation Plan, Niagara Escarpment Plan, Greenbelt Plan, or Lake Simcoe Protection Plan. Refer to Section 4.4 for polices related to the South Georgian Bay Lake Simcoe Source Protection Plan.

3.0 Population and Employment Growth Forecast

As a lower tier municipality, growth projections for the Town are typically derived from Provincial and/or Simcoe County estimates. In 2017 the Ontario Ministry of Municipal Affairs released the Growth Plan for the Greater Golden Horseshoe which provided distribution of residential population and employment for Simcoe County to 2031. Provincial distribution of population and employment provided from the report aligns with the Simcoe County Growth Plan Amendment No. 1.

In 2022, the More Homes Built Faster Act (Bill 23) was introduced, changing several legislations for municipalities. As such, Simcoe County will no longer be responsible for planning responsibilities and upper tier municipalities, such as Simcoe County, will be distributed into lower tier municipalities. It is unclear when an updated growth projection will be made available for the Town of Midland. In the interim, population and employment projections were estimated by the Town using growth allocations from the Province for Simcoe County for 2031, 2036, and 2041 and distributed to Midland based on previous percent allocations used by the County. This allocation is summarized in Table 2 below.

Table 2 Estimated Population and Employment Projections

	2006[1]	2031	2036	2041
Residential	16,900	22,500	24,663	26,881
Employment	12,000	13,800	15,127	16,487
Residential Distribution (%)	58	62	62	62
Employment Distribution (%)	42	38	38	38

Table Notes:
(1) 2006 Census Data - Statistics Canada

Based on the Town's projections, a large portion of anticipated residential and commercial growth in the Town is expected to occur in the west and south quadrants on the Town. The anticipated residential population for the 20-year horizon in 2041 is 26,881, an increase of 6,621 persons from 2021. Using the Town's current population density of 2.2 people per unit for residential areas this equates to 3,010 new units between 2021 and 2041. Table 3 summarizes the allocation of residential growth to 2041 and beyond 2041.

Table 3 Allocation of Residential Growth (Units)

Area No.	Development Name	Draft Approved	Vacant	Total	Developed 2021-2041	Developed > 2041
1	Sunnyside (1165 Brunelle Side Rd)	0	916	916	0	916
2	Midland Bay Estates (Phase 1)	92	0	92	92	0
	Bayport Village (Phase 2)	467	0	467	233	234
3	Phase 1 CR93 SP Area	0	1,764	1,764	115	1,649
4	Midland Bay Landing	0	1,089	1,089	545	544
6	CR (3-Hwy12)	0	1,029	1,029	0	1,029
7	Hanson	1,702	0	1,702	1,592[1]	0
8	Pratt Galloway	202	0	202	202	0
9	Brooklea GCC	0	1,606	1,606	114	1,492
E1	Sunnyside (Existing)	0	0	0	0	200
E2	Martyr's Shrine (Existing)	0	0	0	7	0
				Total Allocated	**2,900**	**6,064**

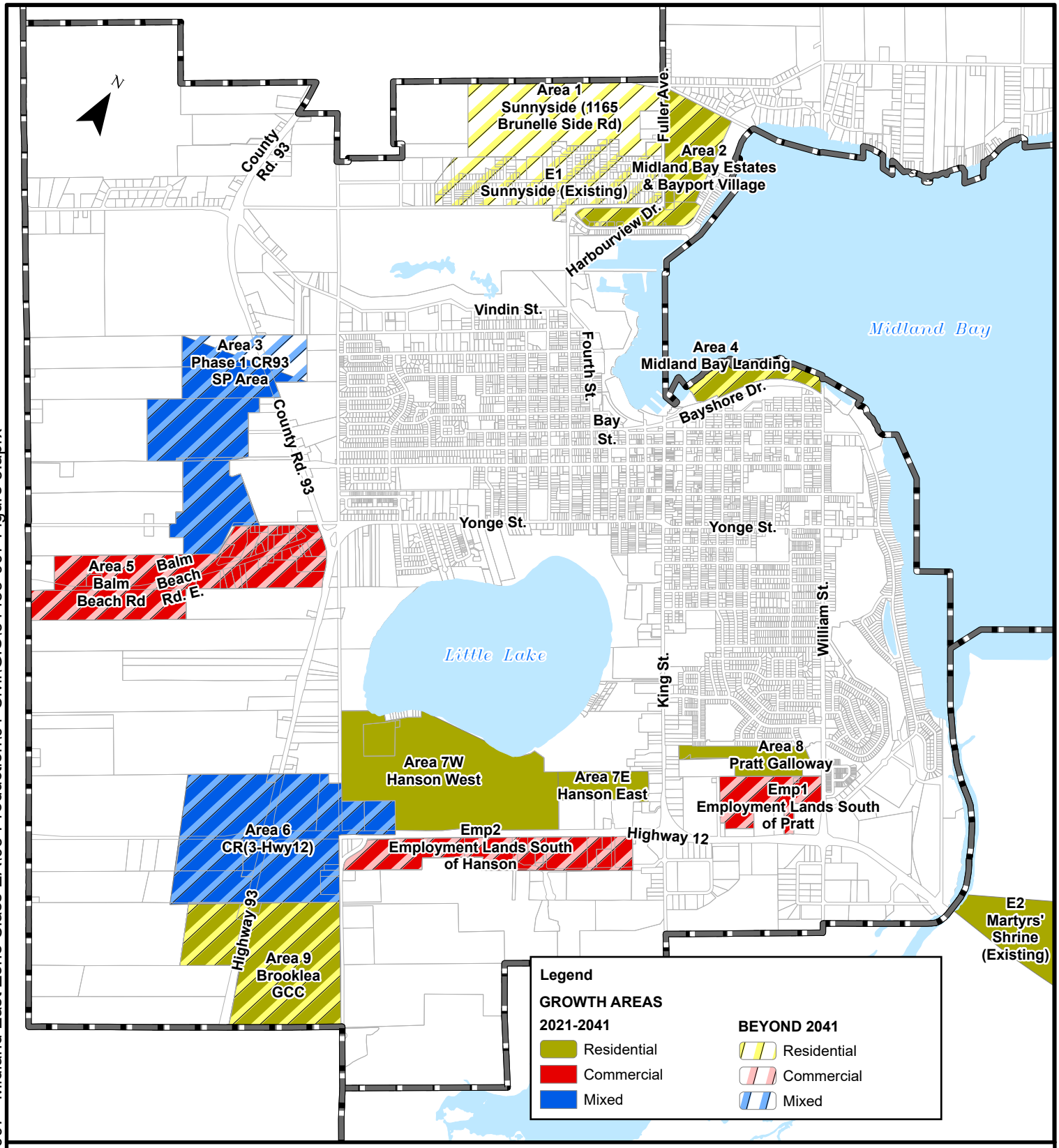
Table Notes:
(1) 110 Units were constructed between 2021 -2024

Based on the Town's projections, the anticipated employment for the 20-year horizon in 2041 is 16,487, an increase of 3,407 persons from 2021. Assumptions were made to estimate the number of hectares of employment land required to 2041, and 33 ha are required between 2021 and 2041. Table 4 summarizes the allocation of employment growth.

Table 4 Allocation of Employment Growth

Area No.	Name	EA / Commercial (ha)	Developed 2021-2041 (ha)	Developed > 2041 (ha)
3	Phase 1 CR93 SP Area	19.7	6.6	13.1
5	Balm Beach Road (Phase 1) (1)	20.6	20.6	0.0
	Balm Beach Road (Phase 2)	36.1	0.0	36.1
6	CR (3-Hwy12)	32.9	9.4	23.6
Emp1	Employment Land's South of Pratt	16.7	5.6	11.1
Emp2	Employment Lands South of Hanson	21.2	7.1	14.1
		Total Allocated	**33**	**98**

Table Notes:
(1) Growth for Balm Beach Road Phase 1 includes 30 existing units (16.3 ha) that has been excluded from the total allocated.



PROJECT:

MIDLAND EAST PRESSURE ZONE CLASS ENVIRONMENTAL ASSESSMENT

TOWN OF MIDLAND, ONTARIO

DRAWING:

PROJECTED RESIDENTIAL AND EMPLOYMENT GROWTH AREAS

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FIGURE 5

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4.0 Overview of Infrastructure and Master Plan Recommendation

4.1 System Overview

The Town of Midland currently operates on a groundwater system, supplying drinking water to approximately 5,400 customers. Each well house is equipped with the infrastructure to treat incoming raw water before being sent to storage reservoirs. Treated drinking water is distributed to the community via watermain infrastructure.

Currently the drinking water system is comprised of the following infrastructure:

- Five (5) storage facilities
- Five (5) booster pumping stations.
- Four (4) entry well sites, including:
    - Highway 12 Treatment System
    - Hanley Treatment System
    - Penetanguishene Treatment System
    - Vindin Well Field
- One (1) groundwater aquifer
  Ten (10) production wells, nine (9) of which are active

4.2 Summary of Master Plan Findings

In August of 2021, Aecom Canada Ltd. conducted a Water Servicing Master Plan Update for the Town of Midland's water distribution system. Four (4) alternatives were developed to address storage deficiencies as follows:

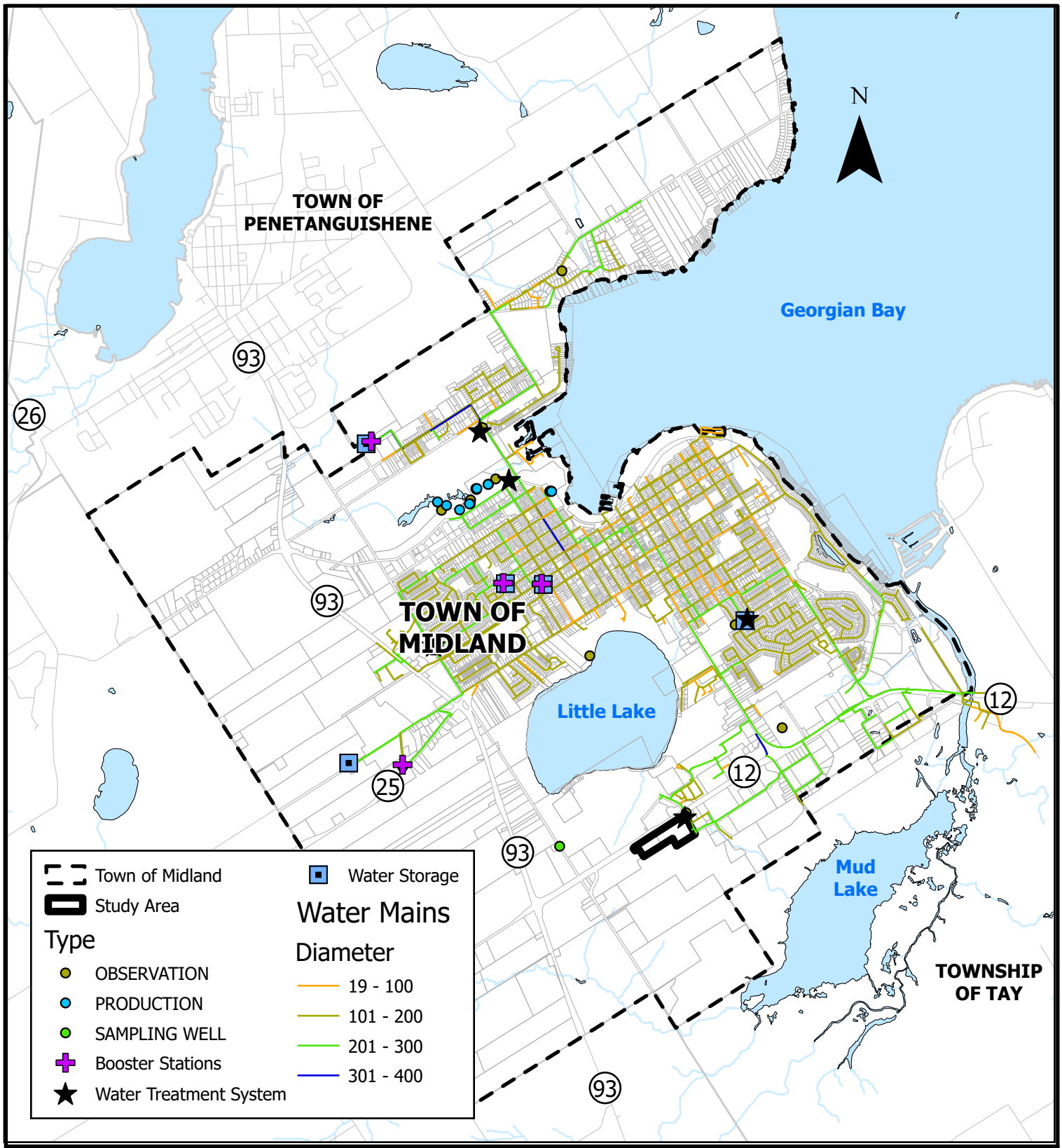
- Alternative 1: Do Nothing
- Alternative 1A: Install New Tank in area of Wells 7A/7B
- Alternative 1B: Install New Tank Near Intersection of Hwy 12/King Street
- Alternative 1D: Install New Tank at Existing Dominion Standpipe Location

Three (3) alternatives were developed to address pressure deficiencies as follows:

- Alternative 4: Do Nothing
- Alternative 4A: New Pressure Zone & Booster Pumping Station at Hwy 12/King St. Area
- Alternative 4B: Connect Area South of Little Lake to West Pressure Zone via County Rd. 93

As part of the evaluation process, consultation with all stakeholders and agencies as well as two Public Information Centres (PICs) were conducted. Alternatives 1B and 4A were presented as the preferred servicing alternatives; however, concerns were raised regarding the location and ground elevation of alternative 1B. As such, following the second PIC alternative 1A was carried forward as the preferred servicing alternative. This allowed the proposed storage location to have higher ground elevation and reduce low pressure concerns.

The findings of the Master Plan conclude that alternative 1A and 4A were the servicing alternatives best suited for the Town's needs. These options included installing a new tank in well area 7A/7B, establishing a new pressure zone, and building a new booster pumping station off Highway 12.



PROJECT:

MIDLAND EAST PRESSURE ZONE CLASS ENVIRONMENTAL ASSESSMENT

TOWN OF MIDLAND, ONTARIO

DRAWING:

OVERVIEW OF KEY WATER INFRASTRUCTURE

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4.3 Other Ongoing Studies and Projects

In April of 2023, J. L. Richards & Associates commenced a Conceptual Design Report for Booster Pumping Station Upgrades in the Town of Midland. The purpose of this assessment was to complete a conceptual pump selection and BPS Design at the Hanly, Everton and Dominion Booster Pump Stations based on the findings of the 2021 Water Servicing Master Plan.

4.4 Existing Infrastructure

A summary of the key characteristics of the Town's water distribution system is shown in Figure 6 and summarized below in Table 5, Table 6 and Table 7. The Dominion Standpipe, listed in Table 6, has been identified previously in the 2021 Aecom Water Master Plan as showing considerable signs of ageing. The recommendation is to decommission the Dominion Standpipe within the next 5-10 years and account for the loss of storage capacity with a newly built storage reservoir.

Table 5 Midland Groundwater Well Summary

Name	Year Constructed	Production	PTTW (L/Day)
Well 7A	1972	57 L/s @ 103.7 m TDH	4,924,800
Well 7B	1989	49 L/s @ 105.5 m TDH	4,233,600
Well 9	1978	23 L/s @ 38 m TDH	1,963,800
Well 15	1985	15.2 L/s @ 42 m TDH	1,309,200
Well 6	1971	20.8 L/s	1,641,600
Well 11	1978	20.8 L/s	1,961,200
Well 12	1979	7.6 L/s	656,000
Well 14	1979	11.4 L/s	984,900
Well 16	1987	15.2 L/s @ 30 m TDH	1,313,300

Table 6 Midland Storage Reservoir Summary

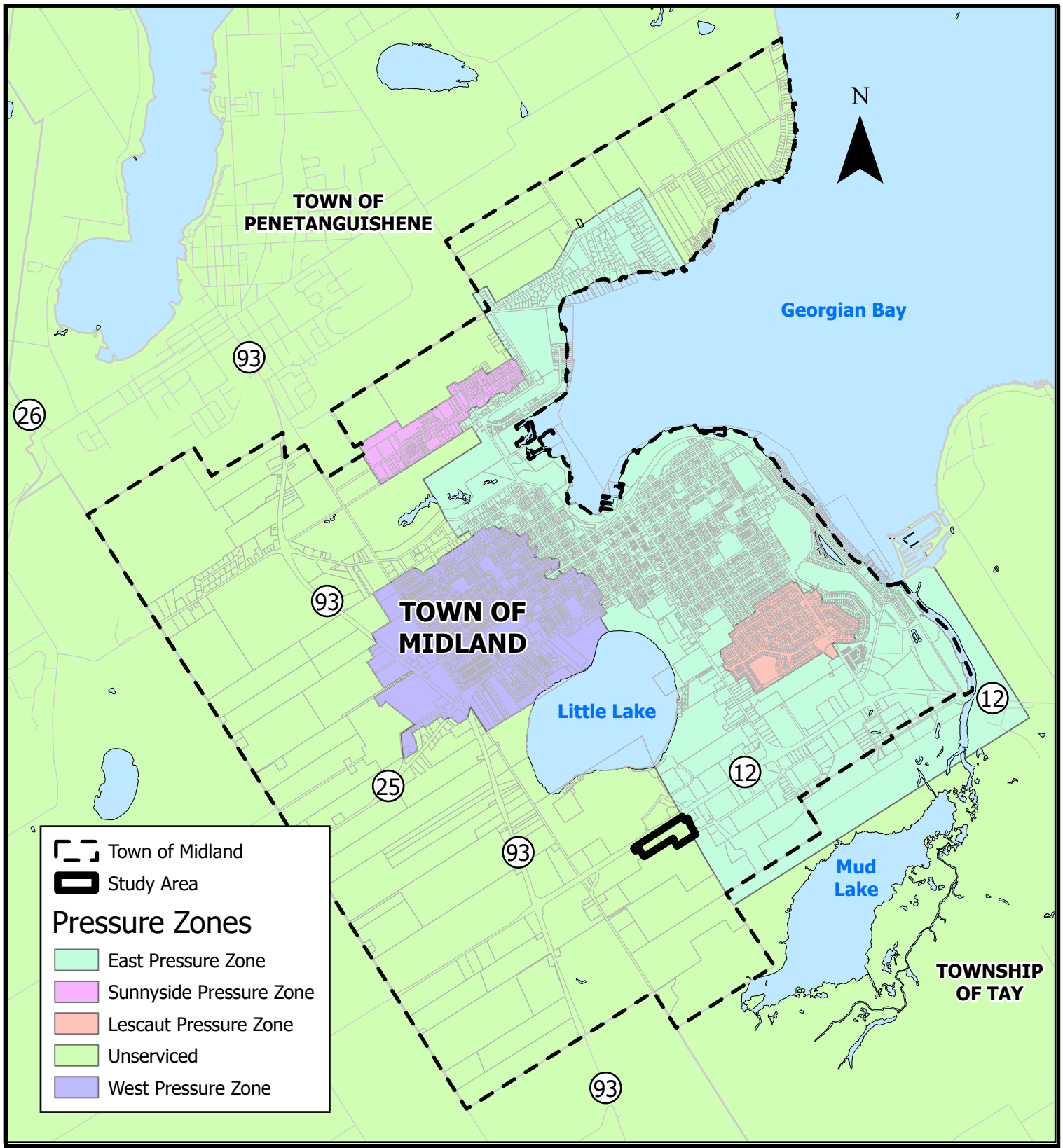
Name	Built	Location	Type	Rated Capacity (m^3)
Dominion Standpipe	1901	755 Dominion Ave, West Pressure Zone	Standpipe	713
Montreal Tank	1989	837 Montreal St, West Pressure Zone	Cylindrical glass-fused-to-steel standpipe	2,881
Everton Tank	2009	300 Frontenac St, Everton Pressure Zone	Cylindrical glass-fused-to-steel standpipe	5,863
Hanly Tower	1947	365 Hanly St, Lescaut Pressure Zone	Multi column elevated tank	950
Mountainview Reservoir	2010	55 Wilson Rd, West Pressure Zone	Cylindrical glass-fused-to-steel standpipe	4,430

Table 7 Midland Booster Pumping Station Summary

Name	Location	Infrastructure	Rated Capacity
Dominion Ave BPS	755 Dominion Ave, West Pressure Zone	BP #1	34.7 L/s @ 61 m TDH
		BP #2	34.7 L/s @ 61 m TDH
		Fire Pump	132.5 L/s @ 61 m TDH
Montreal St BPS	837 Montreal St, West Pressure Zone	BP #1	18.2 L/s @ 61 m TDH
		BP #2	18.2 L/s @ 61 m TDH
		Fire Pump	126.2 L/s @ 40 m TDH
Everton BPS	300 Frontenac St, Everton Pressure Zone	BP #1	7.9 L/s @ 21 m TDH
		BP #2	7.9 L/s @ 21 m TDH
		BP #3	7.9 L/s @ 21 m TDH
Sundowner BPS	Northwest of Everton Rd, West Pressure Zone	BP #1	76 L/s @ 58.8 m TDH
		BP #2	76 L/s @ 58.8 m TDH
Hanly BPS	365 Hanly St, Lescaut Pressure Zone	BP #1	9.47 L/s @ 69 m TDH
		BP #2	9.47 L/s @ 69 m TDH

4.5 Pressure Zones

The Town of Midland consists of four (4) main pressure zones: East, West, Sunnyside, and Lescaut. The East Pressure Zone is the largest, followed by the West, Lescaut, and Sunnyside. There are three (3) storage reservoirs in the West Pressure Zone, and two (2) in the East Pressure Zone. Water is pumped from areas of lower hydraulic grade lines to the other pressure zones using booster pumping stations. As such, the East Pressure Zone supplies water to the Lescaut and Sunnyside Pressure Zones as well as portions of the West Pressure Zone. A complete boundary map of the existing pressure zones can be seen in Figure 7.



PROJECT:

MIDLAND EAST PRESSURE ZONE CLASS ENVIRONMENTAL ASSESSMENT

TOWN OF MIDLAND, ONTARIO

DRAWING:

EXISTING PRESSURE ZONES

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FIGURE 7

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5.0 Environmental and Land Use Considerations

5.1 Adjacent Property Uses

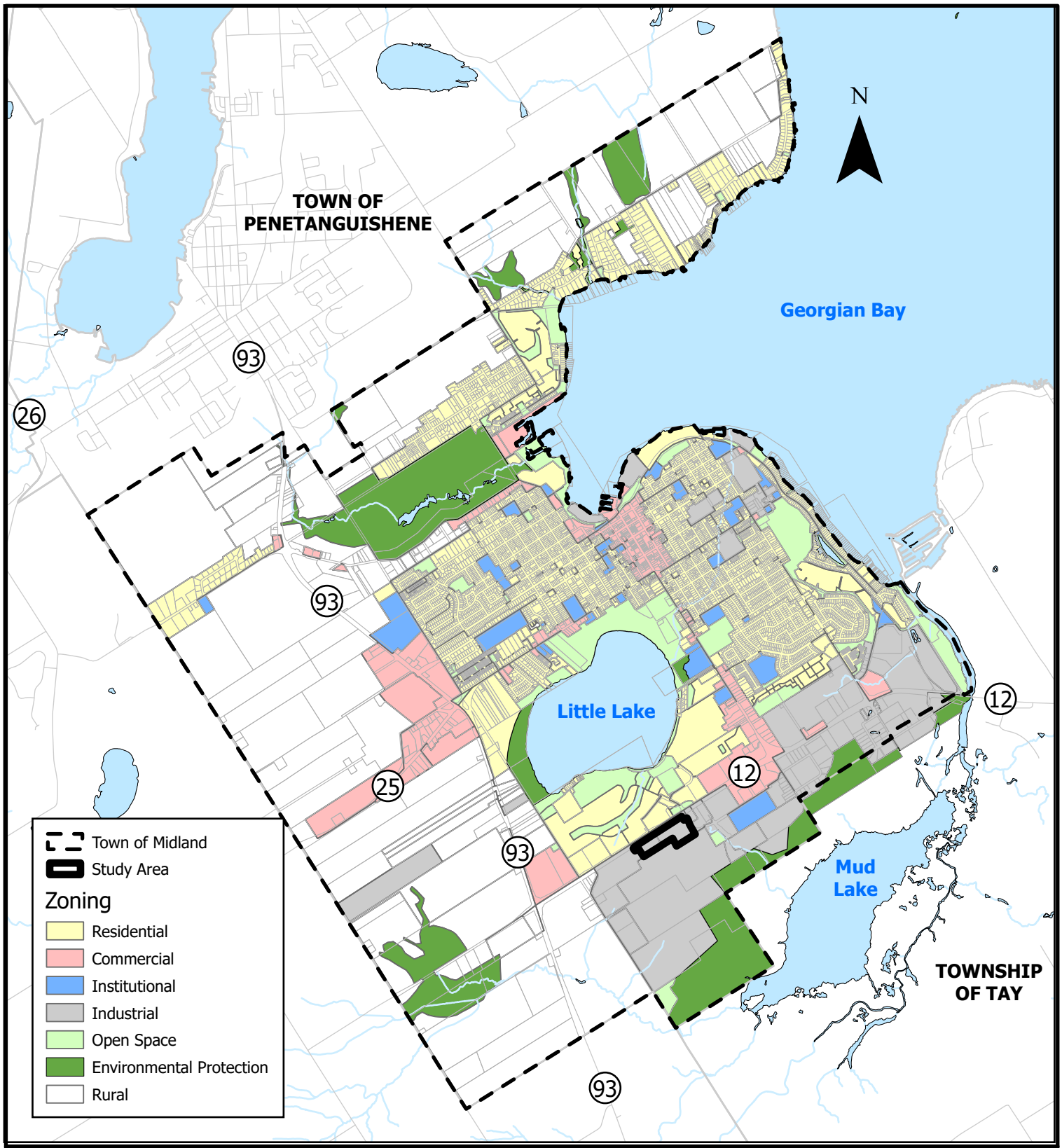
Based on the Town of Midland Schedule 'C' Official Land Use Map, the study area is adjacent to lands designated as "Aggregate Extraction Areas" and "Natural Heritage Areas". Opposite to the site, across Highway 12, the area is designated as an "Existing Development Approval" in which a 104-ha subdivision will be built. The designated land uses in the Town are highlighted in the zoning map provided in Figure 8.

5.2 Natural Environment

The study area consists of a large parcel located along Highway 12 at West of 16984 ON-12, Midland, Ontario. For this Class EA, Pinching Ltd. (Pinchin) conducted a background review and corresponded with regulators prior to conducting field surveys in the summer of 2024 to prepare a Species at Risk Screening (**Appendix A**). The Pinchin report characterized natural heritage features and functions of the site selected for the new booster pump station, water storage tank and a 1,400 m watermain, indicating potential impacts of the new proposed infrastructure on these areas, and recommending measures to mitigate the impacts. In total, five vegetation communities were identified within the Study Area where work is being proposed (see Figure 9). The study concluded that the woodlands and structures on the Site have the potential to provide suitable habitat to several species, however no SARs were observed during the Site visit. As such, the study area was deemed suitable for the proposed development. To minimize potential effects on any future nesting birds in the area, Pinchin recommended that any tree and vegetation removal be scheduled outside the active breeding bird window (March 28 and August 26). Permits will most likely be required for the removal, and specialized wildlife surveys, such as a bat survey, may also be necessary as per MECP regulations. These requirements will be confirmed during detailed design.

5.3 Archaeology

An archaeological assessment was conducted by Archaeological Research Associates Ltd. (ARA) in September 2024 for the study area boundary identified in Figure 1 (see full report in **Appendix B**). The study area boundary land conditions and archaeological potential were examined through background review and site visits. The Stage 1 assessment determined that the study area comprises a mixture of areas of archaeological potential and areas of no archaeological potential. It was recommended that all areas of archaeological potential that could be impacted by the project be subject to a Stage 2 property assessment using the test pit survey method in accordance with Section 2.1 of the 2011 *Standards and Guidelines for Consultant Archaeologists (S&Gs).* It was also noted that the identified areas of no archaeological potential do not require any additional assessments (see Figure 10). The Stage 2 archaeological assessments will be completed during detailed design.



PROJECT:

MIDLAND EAST PRESSURE ZONE CLASS ENVIRONMENTAL ASSESSMENT

TOWN OF MIDLAND, ONTARIO

DRAWING:

ZONING

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS

DESIGN:	TB
DRAWN:	TB
CHECKED:	MD/CV
JLR #:	31483-007

DRAWING #:

FIGURE 8

File Location: P:\31000\31483-007 - Midland East Zone Class EA\03-Production\01-Civil\GIS\31483-007 Figure 9.aprx

Plot Date: November 4, 2024 2:53 PM

PINCHIN

PROJECT NAME:	Species at Risk Screening
CLIENT NAME:	J. L Richards & Associates
PROJECT LOCATION:	West of 16984 ON-12, Midland, Ontario
FIGURE NAME:	Ecological Land Classification

PROJECT NO.	344428.000
DATE:	August 2024
SCALE:	1:1,800
FIGURE NO.	2

LEGEND

Site Boundary
Roadway

Ecological Land Classification
1. Commercial (CVC)
2. Dry – Fresh Red Oak – Hardwood Deciduous Forest (FODM2-4)
3. White Ash Deciduous Woodland (WODM4-2)
4. Sumac Deciduous Shrub Thicket (THDM2-1)
5. Water Treatment (CVI_3)

NOTES

1. All features and measurements are approximate and subject to field verification. This map is for planning purposes only.
2. Use dimensions as shown, do not scale drawing.
3. This map is not to be used for legal purposes.

0 15 30 60 Metres

Coordinate System: NAD 1983 CSRS UTM Zone 17N
Projection: Transverse Mercator
Datum: North American 1983 CSRS

DRAWN BY: MH REVIEWED BY: KH REVISION: 0

Study Area

Property Parcel

Previous Assessments

PIF# PP125-0208-2016 (Stage 4)

PIF# P1030-0033-2018 (Stage 4)

Areas Surveyed

Test Pit Survey at an Interval of 5 m

Combination Survey to Confirm Disturbance

Areas Not Surveyed

No Archaeological Potential - Disturbed

ARA

1:3,100

0 50 100 m

N

5.4 Cultural Heritage

A cultural heritage assessment was completed by ARA Heritage for the study area boundary identified in Figure 1. A Cultural Heritage Assessment Report (CHAR) was prepared in October 2024 to summarize any cultural heritage resources within and adjacent to the study area that may be impacted by the new commercial complex (full report in **Appendix C**). The study area for the CHAR included property parcels on the north and south side of Heritage Road, and property parcels on the east and west side of Beamish Road. The study involved background research concerning the project and historical context of the study area, consultation with the Town and County staff, identification of any designated or recognized properties within and adjacent to the study area, and on-site inspection and creation of an inventory of all properties with potential built heritage resources and cultural heritage landscapes within and adjacent to the study area. ARA identified no cultural heritage resources within or adjacent to the study area. Thus, there are no concerns with respect to Built Cultural Resources and Cultural Heritage Landscapes related to the proposed East Pressure Zone Environmental Assessment.

6.0 Design Basis and Projected Water Demands

6.1 Historical Average, Maximum Day and Peak Demand

Water demands are documented each year in the Town's Drinking Water Systems Annual Report (O. Reg. 170/03) and are submitted to the Ministry of the Environment, Conservation, and Parks. The reported annual water demands for 2021-2023 are summarized in Table 8.

Table 8 Midland Historic Average and Maximum Water Demands (2021-2023)

Year	Maximum Day Demand (m^3/d)	Average Day Demand (m^3/d)	Residential Population	Max. Day Demand Factor	Per Capita Demand (L/cap/day)
2021	9,933	5,368	20,260	1.85	265
2022	8,097	5,426	20,260	1.49	268
2023	7,828	5,411	20,260	1.45	267
Average	**8,619**	**5,402**	**20,260**	**1.60**	**267**

Based on the available data, the Town's water supply system has been operating at an average day demand (ADD) of 5,402 m^3/day with a maximum day demand (MDD) of 8,619 m^3/day. Based on the historical data, the Town's maximum day factor is 1.6. Using the MECP Design Guideline (2008), the theoretical maximum day factor is 1.9. These values are both within a comparable range. For design purposes the MECP maximum day factor for the proposed equivalent population will be applied.

Observed residential water demands across the province are ~ 223 L/cap/d (Statistics Canada, 2021). Based on historical data, the Town's average daily per capita demand is 267 L/cap/d, considering a current (2021) population of 20,620 as per the Town's projections. Although this is higher than the provincial trends for consumption, it is slightly below the MECP Design Guidelines for Drinking Water Systems (2008) residential per capita demand in the range of 270 – 450 L/cap/day.

6.2 Design Criteria and Assumptions

Assumptions for per capita / per unit water consumption, occupancy rates, peak demand factors, and population distribution have been made based on the Aecom Water Master Plan completed in 2021 as well as MECP Design Guidelines and the Town's growth projections. These values will be used to estimate projected water demands from 2031-2041 and beyond 2041. Such assumptions can be seen in Table 9 below.

While the Town's calculated average per capita demand is 267 L/cap/d (see Table 8), design values of 246 L/cap/d were used in the Town's Water Servicing MSP (AECOM, 2021) for future servicing scenarios. This can be attributed to the existing demand calculations not accounting for the equivalent population from industrial sources. Additionally, the calculated maximum day factor of 1.6 (see Table 8) falls within the range of both the residential and employment maximum day factors used in the previous Master Plan. As a result, the per capita demand and maximum day demand factors from the previous Master Plan appear reasonable and will be utilized moving forward to inform calculations for storage requirements.

Table 9 Midland Historic Water Consumption and Occupancy Rates

Description	Assumption
Per Capita Water Consumption for Existing Scenario (based on consumption records)	Residential – 200 L/cap/d Employment – 164 L/cap/d
Per Capita Water Consumption for Future Scenario (based on previous Water Master Plan estimates)	Residential – 246 L/cap/d Employment – 200 L/cap/d
Unit Area Water Consumption (based on Section 3.4.4 ('Industrial Water Demands') of 'Design Guidelines for Drinking-Water Systems 2008' published by the MECP)	Employment – 28,000 l/ha/day
Occupancy Rates (based on previous planning experience and previous Master Planning studies)	Low Density – 3.5 ppu Medium Density – 2.5 ppu High Density – 1.7 ppu Unknown – 2.2 ppu
Peak Residential Factors (in accordance with MOE Design Guidelines as recommended in the Engineering Development Standards for the Town of Midland)	Max Day Demand Factor – 1.9 Peak Hour Demand Factor – 2.85
Peak Employment Factors (in accordance with MOE Design Guidelines as recommended in the Engineering Development Standards for the Town of Midland)	Max Day Demand Factor – 1.5 Peak Hour Demand Factor – 2.25
Average Population Distribution (Based on Census Data and the Town's Future Projections – See Table 2)	Residential – 62% Employment – 38%

6.3 Existing and Future Conditions Modelling

Given the magnitude of expected growth and hydraulic grade lines in the west and south quadrants of the Town, an additional pressure zone is planned for future implementation. The new pressure zone is adjacent to the eastern pressure zone and includes all future development in the southwest quadrant including areas 6 (CR(3-Hwy12)) and 9 (Brooklea GCC) as well as

any new development in areas 7W (Hanson West) and Emp2 (Employment Lands South of Hanson). Based on elevation data, a preliminary boundary map of the new southwest pressure zone is shown in Figure 11.

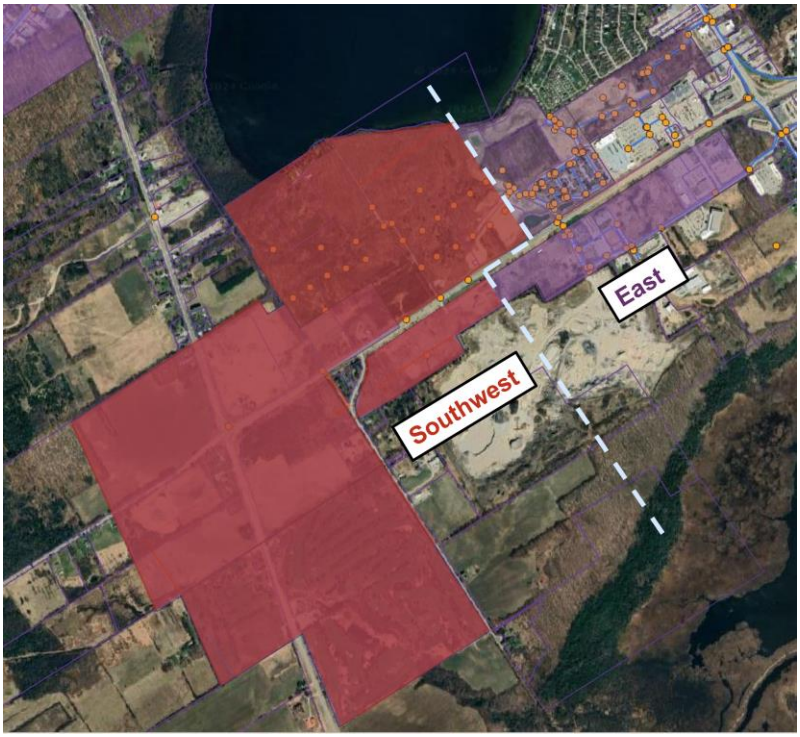


Figure 11 Southwest Pressure Zone Boundary Map

The Town's Hydraulic Water Model (model) was developed and calibrated in 2013 for the Town's Waterworks Master Plan and updated in 2021 for the Town's Water Servicing Master Plan Update. An initial step in the evaluation of supply and storage requirements and alternatives for the East Pressure Zone MCEA was to update the existing model to reflect 2024 (inclusive) operating conditions. The Town's existing InfoWater model was reviewed, and updates were applied to the water distribution network, systems operations and controls and water demands. The model was then updated to include future growth projections up to and beyond 2041 in the new Southwest Pressure Zone, including a proposed new water tower and pumping station to supply the existing East Pressure Zone and future Southwest Pressure Zone. The results of the model were then used to determine expected pressure and fire flow availability within the Town under the future growth projections. The modifications and updates to the model are outlined in the Technical Memoranda provided in **Appendix D**.

6.4 Current and Future Demands

The Average Day Demand (ADD) and Maximum Day Demand (MDD) were calculated based on the allocation of Residential and Employment growth in the Town up to and beyond 2041 (Refer to Table 3 Table 4) as well as the assumptions for per capita / per unit water consumption, occupancy rates and peak demand factors outlined in Table 9. Equivalent Residential (RES) and Employment (EMP) populations were then determined based on the per capita / per unit water consumption and the average population distribution assumptions detailed in Table 9. The ADD, MDD, and total equivalent population for each pressure zone are summarized in Table 10.

As the East pressure zone provides storage for the Lescaut, Sunnyside and Southwest pressure zones, flow demands and equivalent population were also considered for the combined East Pressure Zone (East, Lescaut, Sunnyside, Southwest).

Table 10 Equivalent Population and Projected Demands for Each Pressure Zone

Pressure Zone	Scenario	Equivalent Population			Demand (ML/d)	
		RES	EMP	Total	ADD	MDD
East	Existing	13,051	9,762	22,813	4.21	8.33
	2041	13,363	10,081	23,443	5.30	10.32
	Beyond 2041	17,581	13,263	30,844	6.98	13.14
West	Existing	3,915	2,928	6,843	1.26	2.43
	2041	5,281	3,984	9,266	2.10	3.70
	Beyond 2041	11,308	8,531	19,838	4.49	7.70
Lescaut	Existing	1,098	821	1,919	0.35	0.68
	2041	1,098	821	1,919	0.35	0.68
	Beyond 2041	1,098	821	1,919	0.35	0.68
Sunnyside	Existing	289	216	505	0.09	0.18
	2041	289	216	505	0.09	0.18
	Beyond 2041	1,920	1,448	3,368	0.76	1.45
Southwest (New)	2041	3,294	2,485	5,780	1.31	2.32
	Beyond 2041	7,681	5,794	13,475	3.05	5.45
East Combined	Existing	14,438	10,799	25,237	4.66	9.19
	2041	17,785	13,417	31,201	7.06	13.50
	Beyond 2041	28,074	21,179	49,252	11.14	13.50

6.5 Water Storage

6.5.1 Storage Calculation Approach

As identified within the Water Master Servicing Plan (Aecom, 2021), the East Pressure Zone has three water storage facilities: Dominion Standpipe (0.713 ML), Everton (Sunnyside) Tank (5.80 ML) and the Hanly Tank (0.95 ML). The East Pressure Zone storage infrastructure provides storage for the Sunnyside and Lescaut pressure zones, as these are direct pressure zones without floating storage. It will also provide storage for the future development within the new Southwest pressure zone. The West pressure zone has two water storage facilities: Mountainview Tank (4.43 ML) and Montreal Tank (2.881 ML).

In the previous 2021 Water Master Servicing Plan, it was concluded there is an existing and future water storage deficit in the East pressure zone (existing deficit is 1.17 ML and future deficit is 4.54 ML). As part of this MCEA, the storage requirements within each pressure zone were re-evaluated to account for the updated growth projections for the town up to and beyond 2041.

The MECP calculation for water storage requirements is provided in Equation 1. Fire flow requirements (suggested flow and duration) are based on the MECP method for sizing water storage needs, summarized in Table 8-1 of the Design Guidelines for Drinking Water Systems.

Total treated water storage within the system should at least amount to the sum of the required equalization storage, fire storage, and emergency storage allowances (e.g. major watermain breaks, natural disaster, treatment issue, etc.).

Equation 1: MECP Storage Calculation

$$Total\ Water\ Storage\ Volume\ Required = A + B + C, \qquad Where;$$
$$A = Fire\ Storage\ (m^3)$$
$$= Suggested\ Fire\ Flow\ \left(\frac{L}{s}\right) \times Duration\ (hrs)$$
$$B = Equalization\ Storage(m^3)$$
$$= Storage\ volume\ to\ meet\ the\ diurnal\ variation\ of\ the\ maximum\ day\ condition$$
$$= 25\%\ of\ MDD$$
$$C = Emergency\ Storage\ (m^3)$$
$$= Additional\ storage\ for\ emergency\ events$$
$$= 25\%\ of\ (A + B)$$

6.5.2 Fire Flow and Water Storage Requirements

As the East pressure zone provides storage for the Lescaut, Sunnyside and Southwest pressure zones, the storage requirements for the Town will consider the total East pressure zone storage deficit. The East pressure zone's storage calculations were performed using two separate approaches. The first method, which is consistent with the approach used by Aecom in the 2021 Master Plan, calculates the individual storage requirements for all pressure zones drawing from the East water storage infrastructure (East, Sunnyside, Lescaut, Southwest) based on each zone's population and flow demand (see Table 11). The total storage requirements for the East pressure zone were then calculated as the sum of individual pressure zones' storage requirements. In the second method, the required storage deficit for the East pressure zone was calculated based on the combined population and flow demand from all individual pressure zones drawing from the East water storage infrastructure (see Table 12).

By calculating the individual storage requirements in each pressure zone (method 1), the total storage deficit in the East pressure zone for the 2041 and beyond 2041 buildouts are 3.61 ML and 10.97 ML, respectively. Calculating the storage requirements based on total demand and population in the East zone (method 2) resulted in a storage deficit of 3.91 ML and 6.96 ML in the East pressure zone for the 2041 and beyond 2041 buildouts, respectively. Method 1 is a more conservative approach compared with method 2, resulting in approximately 3 ML additional storage requirements for the beyond 2041 buildout, due to combined fire flow calculations. As such, the storage requirements determined using method 2 will be carried forward for the design, as it allows for averaging out the demands across the entire system, reducing the likelihood of overestimating localized peak demands within individual pressure zones. Given the anticipated development timelines and the challenges associated with expanding a reservoir, it was determined, in consultation with Town staff, that the longer-term scenario (beyond 2041) would be selected as the design basis for the new storage tank and pump station.

Table 11 Pressure Zone Storage Requirements (Method 1)

Pressure Zone	Existing Built Storage (m^3)	Scenario	Fire Flow		Storage Requirements (ML)					
			Flow (L/s)	Duration (hrs)	Fire	Equalization	Emergency	Total Required	Available	Surplus/Deficit
East	7.463	**Existing**	250	4	3.600	2.082	1.421	7.103	7.463	**0.360**
		2041	250	4	3.600	2.580	1.545	7.725	7.463	**-0.262**
		Beyond 2041	318	5	5.724	3.284	2.252	11.260	7.463	**-3.797**
West	7.311	**Existing**	159	3	1.717	0.607	0.581	2.905	7.311	**4.406**
		2041	159	3	1.717	0.926	0.661	3.304	7.311	**4.007**
		Beyond 2041	250	4	3.600	1.924	1.381	6.905	7.311	**0.406**
Sunnyside	0	**Existing**	38	2	0.274	0.045	0.080	0.398	0	**-0.398**
		2041	38	2	0.274	0.045	0.080	0.398	0	**-0.398**
		Beyond 2041	125	2	0.900	0.363	0.316	1.578	0	**-1.578**
Lescaut	0	**Existing**	79	2	0.569	0.170	0.185	0.924	0	**-0.924**
		2041	79	2	0.569	0.170	0.185	0.924	0	**-0.924**
		Beyond 2041	79	2	0.569	0.170	0.185	0.924	0	**-0.924**
Southwest	0	**2041**	144	2	1.037	0.580	0.404	2.021	0	**-2.021**
		Beyond 2041	220	3	2.376	1.362	0.934	4.672	0	**-4.672**
Total East	7.463	**Existing**						8.425	7.463	**-0.962**
		2041						11.069	7.463	**-3.606**
		Beyond 2041						18.435	7.463	**-10.972**

Table 12 Pressure Zone Storage Requirements (Method 2)

Pressure Zone	Existing Built Storage (m^3)	Scenario	Fire Flow		Storage Requirements (ML)					
			Flow (L/s)	Duration (hrs)	Fire	Equalization	Emergency	Total Required	Available	Surplus/Deficit
Total East	7.463	**Existing**	250	4	3.600	2.298	1.474	7.372	7.463	**0.091**
		2041	318	5	5.724	3.376	2.275	11.375	7.463	**-3.912**
		Beyond 2041	378	6	8.165	3.374	2.885	14.423	7.463	**-6.960**
Total West	7.311	**Existing**	159	3	1.717	0.607	0.581	2.905	7.311	**4.406**
		2041	159	3	1.717	0.926	0.661	3.304	7.311	**4.007**
		Beyond 2041	250	4	3.600	1.924	1.381	6.905	7.311	**0.406**

6.5.3 Storage Deficits

The previous Water Master Plan recommended decommissioning the Dominion Standpipe within the next 5-10 years and account for the loss of storage capacity with a newly built storage reservoir. Storage requirements for the East Pressure Zone were then re-evaluated to consider the decommissioning of the standpipe. The storage requirements for the East Pressure Zone for beyond 2041, both with the existing standpipe in service and following its decommissioning, are summarized below.

Table 13 Summary of East Pressure Zone Storage Requirements (2041)

Storage	Volume (ML)			
	Existing Storage	Total Existing Storage	Storage Required Beyond 2041	New Storage Tank
Existing				
Dominion Standpipe	0.713	7.46	14.42	6.96
Sunnyside Tank	5.800			
Hanly Tank	0.950			
Following Decommissioning				
Sunnyside Tank	5.800	6.75	14.42	7.67
Hanly Tank	0.950			

7.0 Summary of Phase 1 Findings

Overall, through the Phase 1 review it has been found that:

- The Town of Midland is anticipating continued growth and development in the community as per the Growth Plan. The projected future population and employment for the Town in the year 2041 is expected to be 26,881 residents and 16,487 employees. This equates to a requirement for 3,010 new residential units and 33 ha of employment land between 2021 and 2024. An additional 6,064 residential units and 98 ha of commercial development are excepted beyond 2041.
- Significant growth is expected in the southwest quadrant of the Town. A new pressure zone is planned for future implementation, adjacent to the eastern pressure zone.
- The previous Master Plan from 2021 identified the need to decommission the Montreal Standpipe and Dominion Standpipe due to signs of aging and difficulty of operation. Additionally, recommendations were made to provide a new storage facility in the East Pressure Zone to improve storage capacity and provide sufficient fire, equalization, and emergency storage in the future.
- Through a consultation process as part of the 2021 Master Plan, a preferred site for the proposed new water storage facility was identified, which has adequate elevation to effectively mitigate low water pressure issues identified.
- No SARs were identified at the preferred site, however given there is suitable habitat for SARs, tree and vegetation removal required for the proposed work is to be scheduled outside the active breeding bird window (March 28 and August 26).
- There are no concerns with respect to Species at Risk, Built Cultural Heritage Resources, and Cultural Heritage Landscape for the preferred site.

- The site comprises a mixture of areas of archaeological potential and areas of no archaeological potential. Areas of archaeological potential that could be impacted by the project will be subject to a Stage 2 property assessment, to be completed during detailed design.
- Based on the available data provided (2021-2023), the Town's water supply system has been operating at an average day demand (ADD) of 5,402 m^3/day with a maximum day demand (MDD) of 8,619 m^3/day. The current maximum day peaking factor is 1.60.
- Water storage requirements for the East Pressure Zone and new Southwest Pressure Zone were established using the MECP methodology. Using this approach, it is evident there will be a storage deficiency in the East Pressure Zone of 7.67 ML beyond 2041, following the decommissioning of the Dominion Standpipe.

The options to address the water storage deficiencies in the East Pressure Zone are reviewed in the following sections.

8.0 Problem and Opportunity Statement

The Town of Midland relies on a groundwater based municipal supply system, serving a residential population of approximately 20,260 people. Existing infrastructure includes five (5) storage facilities, five (5) booster pumping stations, four (4) entry well sites, ten (10) production wells and a groundwater aquifer. While the system has been operating in accordance with all applicable legislation, significant growth pressure is anticipated in the next 20 years.

The 2021 Master Plan concluded that, of the four existing pressure zones within the Town, the East Pressure Zone has limited storage capacity and low pressure on Highway 12. Through Phase 1 of this MCEA, a new pressure zone has been proposed to ensure adequate long-term water supply capable of supporting the substantial growth anticipated in the south and west quadrants of the Town (Southwest Pressure Zone). The new pressure zone will place additional stress on water storage in the existing east pressure zone, as it is anticipated to be supplied by infrastructure in the east pressure zone.

The Town is therefore in need of a solution that will address water storage constraints over the next 20 years and beyond. This presents an opportunity to also improve redundancy and reliability in delivering treated water to the community. Through Phase 2 of this MCEA, the Class EA framework will enable consideration of alternatives and identification of a preferred solution that is environmentally, socially, and financially responsible and sustainable. The study will consider the needs and viewpoints of all stakeholders including, but not limited to, residents, government agencies, the general population, and Indigenous communities.

9.0 Evaluation Methodology

The main objective of Phase 2 of the Class EA is to identify and evaluate possible alternative solutions to the problem(s) (and/or opportunities) identified in Phase 1. As identified in Section 6.3, significant growth pressure in the Town in anticipated in the next 20 years. The 2021 Master Plan, as well as Phase 1 of this MCEA, have identified that there are supply and storage deficiencies in the east pressure zone and on Highway 12 South. Reasonable potential solutions to the problem(s), including the 'do nothing' alternative, are considered. To facilitate

the evaluation and selection of the preferred solutions during Phase 2, a transparent and logical assessment process was established. Evaluation criteria were developed based on a review of the background information, experience on similar assessments, and in consultation with Town staff.

The evaluation was conducted using criterion in the following four major categories:

- Natural Environment and Archaeology
- Technical Considerations
- Social Environment
- Economic Considerations

Each alternative was assigned an evaluation impact level (refer to Table 14) for each criterion. This method provides an overall assessment of the positive and negative impacts of each alternative. This method was used as it is recognized that there could be more than one (1) alternative or technology that can address a problem, and that additional consideration of these technologies could be undertaken. Further consideration of design alternatives or technologies will be conducted as part of detailed design.

Table 14 Detailed Evaluation Impact Level and Scoring

Evaluation Impact Level
High Positive Impact
Low/Moderate Positive Impact
No Anticipated Impact
Low/Moderate Negative Impact
High Negative Impact

Once the evaluation was completed, a recommended preferred alternative or alternatives was identified for presentation to stakeholders and to solicit input prior to finalizing a preferred alternative.

10.0 Identification and Evaluation of Proposed Solutions

10.1 Storage Alternatives

As part of the necessary infrastructure upgrades to support anticipated growth, a new storage tank is proposed at the selected site (south of Highway 12). To address storage requirements beyond 2041, a storage volume of 7.67 ML is required. Two options were considered for additional storage, including a standpipe (see Figure 12) and an elevated storage tank (see Figure 13).

10.1.1 Detailed Evaluation

The storage alternatives were evaluated using the criteria described in Section 9.0. A summary of this evaluation is included in Table 15

Figure 12 Example of Storage Alternative 1 – Standpipe

Figure 13 Example of Storage Alternative 2 – Elevated Storage Tank

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Table 15 Evaluation of Water Storage Alternatives

MAJOR CRITERIA	MINOR CRITERIA	STORAGE ALTERNATIVE 1	STORAGE ALTERNATIVE 2
CAPITAL PROJECT COMPONENTS		**STANDPIPE**	**ELEVATED STORAGE TANK**
NATURAL ENVIRONMENT AND ARCHAEOLOGY	**Effect on Fish and Aquatic Habitat**	No anticipated impacts	No anticipated impacts
	Effect on Wetlands, Woodlands, Wildlife Habitat	SAR habitat noted at site, but no SAR observed	SAR habitat noted at site, but no SAR observed
	Effect on Archaeological Resources	Some areas of archaeological potential identified at site – property assessment/test pitting survey required	Some areas of archaeological potential identified at site – property assessment/test pitting survey required
TECHNICAL CONSIDERATIONS	**Ability to Meet Long-Term Storage Requirements**	Limited to meeting short-term development needs due to design constraints for larger standpipes	Can be designed with additional capacity to accommodate long-term development goals
	Technical Viability	Lower elevation of the site requires taller than typical tower, may not be technically viable.	Typical height and operating range for elevated towers.
	Long-term Operating Requirements	Challenging for long-term operation due to large dead volume, which can cause water quality issues and inefficiencies in water usage.	Offers low maintenance and efficient long-term operation.
SOCIAL ENVIRONMENT	**Impacts During Construction**	No anticipated impacts	No anticipated impacts
	Cultural Heritage Impacts	No anticipated impacts	No anticipated impacts
	Compatibility with Surrounding Land Use (Visual Impacts)	High visual impact, however, already utilized within the Town, will have similar look and feel	High visual Impact (can be considered negative or positive)
	Highest and Best Use of Site	Requires a larger base area, limiting the site's flexibility for other uses.	Requires a smaller base area, allowing for flexibility for future development.
ECONOMIC CONSIDERATIONS	**Capital Costing**	Unique size increases construction cost	Higher construction cost
OVERALL EVALUATION		**Low/Moderate Negative Impact**	**Low/Moderate Positive Impact**

10.2 Booster Pumping Station Alternatives

As part of the necessary infrastructure upgrades to support anticipated growth, a new booster pumping station (BPS) is proposed to address fire flow and pressure deficiencies in the new southwest pressure zone. Two alternatives for the BPS were considered (see Figure 14), which both involve a new storage tank located on site south of Highway 12. The first alternative (Alternative A) involves the construction of a new BPS at the site of the proposed storage tank, which will pump water through a new watermain running across Highway 12. The second alternative (Alternative B) includes the construction of a new BPS across Highway 12 in area 7W (Hanson West).

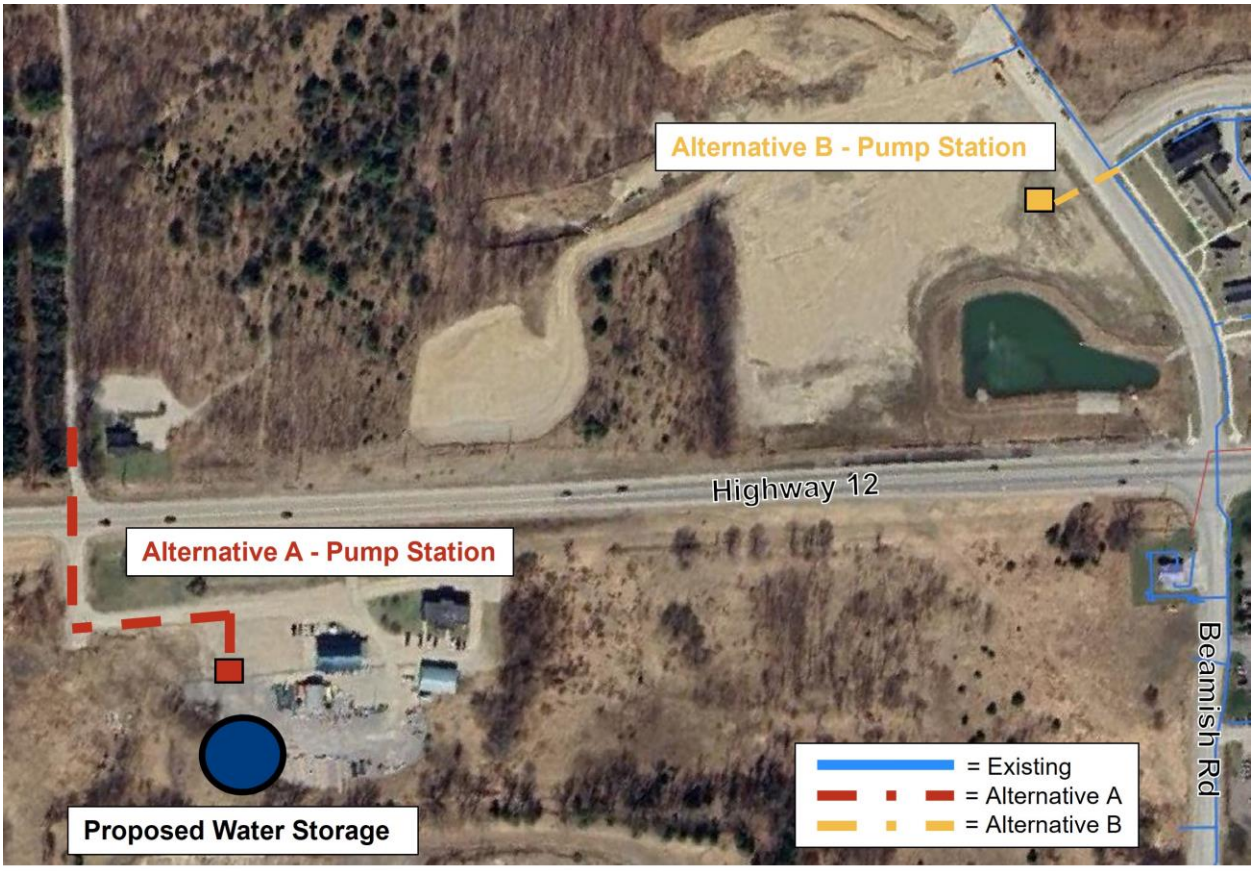

Figure 14 BPS Alternatives Conceptual Layout

10.2.1 Detailed Evaluation

The pump station alternatives were evaluated using the criteria described in Section 9.0. A summary of this evaluation is included in Table 16.

Table 16 Evaluation of Booster Pumping Station Alternatives

MAJOR CRITERIA	MINOR CRITERIA	PUMPING ALTERNATIVE A	PUMPING ALTERNATIVE B
CAPITAL PROJECT COMPONENTS		**BPS AT SITE OF STORAGE**	**BPS ACROSS HIGHWAY 12**
NATURAL ENVIRONMENT AND ARCHAEOLOGY	**Effect on Fish and Aquatic Habitat**	No anticipated impacts	No anticipated impacts
	Effect on Wetlands, Woodlands, Wildlife Habitat	SAR habitat noted at site, but no SAR observed. Tree and vegetation removal will need to be developed outside of bird breeding window	Potential for Impact – would be determined depending on selected site. Development already planned for general location
	Effect on Archaeological Resources	Some areas of archaeological potential identified at site – property assessment/test pitting survey required	Potential for Impact – would be determined depending on selected site
TECHNICAL CONSIDERATIONS	**Ability to meet minimum pressure requirements**	New pressure zone provides adequate pressure for all future development areas	New pressure zone provides adequate pressure for all future development areas
	Ease of approvals	Requires near term crossing of Highway 12, may experience delays due to MTO approvals	Requires longer term crossing of Highway 12, allowing time to secure MTO approvals, reducing potential delays
	Daily Operations and Maintenance Requirements	Simplified O&M as infrastructure is concentrated near the water tower	Increased long-term O&M complexity due to multiple infrastructure sites
SOCIAL ENVIRONMENT	**Impacts During Construction**	Modest construction impacts. Open cut across Highway 12 would disrupt traffic	Limited impacts during construction
	Cultural Heritage Impacts	No anticipated impacts	Potential for Impact – would be determined depending on selected site
	Land Acquisition Required, Zoning and Official Plan Designation	No anticipated impacts	Land acquisition for station required - Anticipated location within development that is currently draft approved with likely no allotment for a booster station
	Compatibility with Surrounding Land Use (Visual Impacts)	No anticipated impacts	BPS to be constructed in/near partially developed area, minor visual impacts
ECONOMIC CONSIDERATIONS	**Capital Costing**	Moderate capital cost	Slightly higher capital cost due to need to acquire land
OVERALL EVALUATION		**Low/Moderate Positive Impact**	**Low/Moderate Negative Impact**

11.0 Preferred Water Servicing Solution

11.1 Selection of the Preferred Servicing Alternative

This evaluation along with key advantages and disadvantages was reviewed with Town staff. Based on the evaluation presented above, the preliminary preferred option includes the construction of both a new 7.67 ML Elevated Tower and a new BPS on the parcel of property located south of Highway 12 and west of Beamish Road. They key highlights of these alternatives include:

- **Storage Alternative 2 – Elevated Tower south of Highway 12**
  - Minimized operational complexity, ensuring better water quality and operational efficiency.
  - Requires smaller land area, allowing for more flexible use of the site for other purposes.
  - Can be designed to provide capacity for all future growth to meet long-term development goals in the Town.

- **Pump Station Alternative A – BPS at Site of Storage (south of Highway 12)**
  - New pressure zone provides adequate pressure for all future development areas.
  - Land already acquired by Town; no negotiations required.
  - Minimized operational complexity, ensuring better operational efficiency.
  - Requires near-term construction of watermain crossing Highway 12.

11.2 Summary of Preferred Alternative

A conceptual layout for this alternative is provided in Figure 15. The proposed elevated tower is to be located at the southwest corner of the site where elevations are highest. It is recommended that the Town carry out further hydraulic water modelling to include an extended period simulation to confirm the system set points and operational feasibility, and maximum and minimum water levels in the elevated tower. The tank will be supplied by the existing distribution system via a watermain running within an easement through the property directly east of the site, connecting to a T-junction in the existing system at Beamish Road (see Figure 15, item 1).

The new BPS will be located on the same site as the new tower and will pump water to the north of Highway 12 via a new buried watermain crossing Highway 12 connecting at Sumac Lane (see Figure 15, item 2). The exact location of infrastructure is to be confirmed during detailed design. Additionally, there are two options to consider for servicing southwestern future development to the south/west, which include:

- Watermain routed through the Ministry of Transportation (MTO) right-of-way along the northern edge of the property directly west of the site (see Figure 15, item 3A)
- Watermain routed through easement on property directly west of the site, along the southern edge of the property (see Figure 15, item 3B)

Option 3A for the watermain route is preferred as it provides easier access for maintenance, repairs, and upgrades compared to an easement on private/developer property. However, selection of this option is dependent on consultation with MTO to address any regulatory or operational requirements. Design alternatives will be confirmed during detailed design. The Town has individually initiated consultation with MTO.

Figure 15 Summary of Preferred Servicing Alternative - Conceptual Layout

11.3 Class 'D' Opinion of Probable Construction Costs

An Opinion of Probable Costs (OPCC) with a Class 'D' (Indicative Estimate) level of accuracy was developed for the preferred alternative (see Table 17) and includes allowances for design elements that have not fully been developed. Class 'D' OPCCs developed for this assignment are expected to be within +/- 30%. The OPCCs were developed based on experience on similar projects, professional judgement, and equipment costs provided by suppliers. Design completed as part of this MCEA are conceptual in nature for the purpose of obtaining Class 'D' cost estimates. All design parameters (e.g., tank size, watermain diameter, etc.) should be confirmed during detailed design.

The expected sensitivity of this analysis (+/- 30%) is connected to less volatile economic conditions than what we have experienced in recent years. Any provided cost estimates or budget is an OPCC that is based on historic construction data and does not include labour, material, equipment, manufacturing, supply, transportation or any other cost impacts related to high inflation rates and ongoing supply chain challenges. JLR shall not be responsible for any variation in the estimate caused by foregoing factors but will notify the Client of any conditions which JLR believes might cause such variation upon delivery of the estimate. Cost estimates are provided in 2024 dollars. It is not possible to ascertain future price escalation, however, by industry best practices escalation should be considered likely between a baseline date of January 2024 and the implementation of these projects. A cost escalation rate should be applied once implementation timing is known.

Table 17 Preferred Option - Class 'D' OPCC ($2024)

ITEM	DESCRIPTION	ESTIMATED CAPITAL COST(1)
1A	New 7.67 ML Elevated Storage Tank(2)	$21,484,000
1B	Extension of Existing Watermain to Storage Tank	$676,500
2A	New Southwest Booster Pump Station at Site	$5,813,800
2B	Watermain from New BPS crossing Highway 12 to north	$459,200
3	Watermain Extension from New BPS along Highway 12 to west	$830,250
	TOTAL (ROUNDED IN 2024 DOLLARS, HST NOT INCLUDED)	**$29,260,000**

Note:
(1) OPC includes General Contractor O&P (18%), Contractor Profit (6%), Engineering and Project Management (15%), and Contingency Allowance (25%)
(2) For cost estimation purposes, it has been assumed that the new tower operating elevations are the same as the existing Everton Tank (Minimum HGL of 244 m, Maximum HGL of 251 m). This should be confirmed during detailed design.

12.0 Public and Agency Consultation

12.1 Public Information Centre

A project mailing list was developed identifying review agency and Indigenous community stakeholders and updated throughout each phase of this Class EA (**Appendix E**).

A Public Information Centre (PIC) for the Midland East Pressure Zone MCEA took place in-person at the North Simcoe Sports & Recreation Centre, in the Bill Thompson Room, on January 21, 2024, from 4:00 pm to 6:00 pm. A Notice of Study Commencement / Notice of PIC (provided in **Appendix F**) was prepared by the consulting team which was mailed and e-mailed to review agencies, public stakeholders, and Indigenous communities on December 20, 2024.

Boards presenting the project information were on display (provided in **Appendix G**) and representatives from the project team and staff from the Town were available to answer questions during the PIC. The PIC was attended by 3 members of the public and 1 Town councilor. Comment forms were provided however, none were completed and returned. Input from attendees was documented and will be taken into consideration during detailed design.

12.2 Review Agency Comments

Table 18 provides a summary of agency comments received throughout the Class EA and the action taken by the project team. Refer to **Appendix H** for a copy of the written correspondence received.

Table 18 Summary of Agency Comments

Stakeholder	Comment	Action
Ministry of Natural Resources (MNR)	December 27, 2024 – In response to the Notice of Study Commencement / PIC, MNR provided an information package with details regarding MNR's role, interests, and regulatory authority in regard to environmental assessments. The package is intended to help identify MNR interests related to the project to determine if continued consultation with MNR is necessary.	The comments were noted by the project team. MNR remained on the project mailing list.
Ministry of Environment, Conservation, and Parks (MECP)	January 6, 2025 – The Notice of Study Commencement / Notice of PIC and streamlined Project Information Form were e-mailed to the MECP. January 17, 2025 – MECP acknowledged receipt and provided supporting information for the project, including guidance on preliminary screening for species at risk and direction on Indigenous consultation requirements.	Indigenous communities were contacted prior to the PIC. Additional information on consultation with HWN is provided in section 12.3. A Species at Risk Screening was completed by Pinchin for the study area. Additional information is provided in Section 5.2.
Ministry of Citizenship and Multiculturalism (MCM)	February 7, 2025 – In response to the Notice of Study Commencement / PIC, MCM indicated a Stage 1 Archaeological Assessment and a Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment should be undertaken as part of the study and summarized in the report.	Refer to Section 5.3 and 5.4. Comments were acknowledged by the project team and incorporated into the Updated Project File Report. The Cultural Heritage Assessment Report will be circulated to MCM once it has been finalized.

12.3 Indigenous Community Comments

A Project Notification Letter Regarding the Stage 1 Archaeological Assessment was e-mailed to the following indigenous communities by ARA on August 9, 2024:

- Beausoleil First Nation
- Chippewas of Georgina Island First Nation
- Chippewas of Rama First Nation
- Huron-Wendat Nation
- Métis Nation of Ontario
- Moose Deer Point First Nation
- Wahta Mohawks

Table 19 provides a summary of Indigenous Community comments received throughout the Class EA and the action taken by the project team. Refer to **Appendix H** for a copy of the written correspondence.

Table 19 Summary of Indigenous Community Comments

Stakeholder	Comment	Action
Huron-Wendat Nation (HWN)	HWN requested to send a monitor to participate in the stage 1 archaeology assessments and provided a quote for the participation.	The request for participation was approved and HWN communicated with ARA regarding fieldwork participation and any concerns/questions about the project.

12.4 Project Team Meetings

A project initiation meeting was held on May 16, 2024, with representatives from the Town and JLR to confirm roles and responsibilities, project understanding, proposed work plan and schedule, and to review current and historical issues associated with the Town's water supply system. Additional progress meetings were held in June 2024, September 2024, and November 2024, December 2024, and January 2025.

13.0 Limitations

This report has been prepared by J.L. Richards & Associates Limited for the Town of Midland's exclusive use. Its discussions and conclusions are summary in nature and cannot properly be used, interpreted or extended to other purposes without a detailed understanding and discussions with the client as to its mandated purpose, scope and limitations. This report is based on information, drawings, data, or reports provided by the named client, its agents, and certain other suppliers or third parties, as applicable, and relies upon the accuracy and completeness of such information. Any inaccuracy or omissions in information provided, or changes to applications, designs, or materials may have a significant impact on the accuracy, reliability, findings, or conclusions of this report.

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