

Appendix C

**Schedule 'B' Project Technical
Memorandum – Alt. 3A Pump
Station Upgrades at Hanley Street**



Technical Memorandum: Schedule B Project to be Satisfied Through Master Plan

Project Type: WATER

- 1. Transmission Routing/Pumping Station Expansion/Siting
- 2. Storage
- 3. Treatment
- 4. Other

Date: Sept. 9, 2020 **Page: 1**

To: Town of Midland

From: AECOM

Project Number:	60593529
Project Name:	Midland Waterworks Master Plan Update
Master Plan Reference ID: DC Reference:	

Municipality/Ward: Town of Midland

Description: Upgrade existing Hanly Street Booster Pump Station (365 Hanly Street) to address capacity issues.

Implementation Timeline:

1) EA Clearance: Through Master Plan	4) Construction: 1-5 years
2) Detailed Design: 1-5 years	5) In-Service Date: 1-5 years
3) Tender: 1-5 years	

Capital Cost: \$2,335,000

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1. Introduction – Study Overview

Background Information: In 2018 The Town of Midland retained the services of AECOM to undertake an update to the existing Waterworks Services Master Plan (2013) to reflect growth in the community, planned development, and operational changes. The Town of Midland is identified as a Primary Urban Settlement Area in the *Growth Plan for the Greater Golden Horseshoe* (2017) and is anticipating continued growth and development in the community. The existing population of Midland is approximately 16,864 and is expected to reach 22,500 by the year 2031. The proposed update to the existing Waterworks Master Plan will provide a comprehensive water servicing infrastructure plan for the community for the next 20 years. It will also support the Town's Official Plan Review and Development Charges Study.

Master Plan Study Area: The project study area includes the limits of the Town of Midland as well as several key stakeholders located within the neighboring Tay Township (i.e. St. Marie Among the Hurons, Martyr's Shrine, and Wye Marsh Wildlife Centre) that are currently serviced by the Town of Midland.

Master Plan Scope of Study: The objectives of the Master Plan Update are as follows:

- Improve water production, supply and servicing in a sustainable manner that can be logically phased to accommodate near and long-term growth expected in the Town of Midland;
- Identify additional infrastructure and improvements to the existing system that must be implemented in a timely and orderly manner to service approved growth;
- Provide a detailed cost phasing and implementation plan to allow the Town to develop a capital works program and budget; and
- Develop a water utility-infrastructure master plan or "road map" that will support future capital works planning and funding opportunities and meet the needs of existing and future water customers.

This undertaking is being completed in accordance with Approach #2 of the Municipal Class Environmental Assessment (Oct. 2000, as amended 2007, 2011 & 2015) with the intent of fulfilling Phases 1 and 2 of the Class EA process. Upon completion of the Master Plan Update, the Schedule 'A', 'A+', and select Schedule 'B' projects identified within the document will be able to proceed to implementation without any further EA requirements. Schedule C projects; however, will require the completion of Phases 3 and 4 at a future date prior to implementation.

Purpose of this Memo: The Preliminary Preferred Strategy to address the issues affecting the Town of Midland municipal water servicing system as presented at Public Information Centre No. 2 consists of a number of individual projects. Each individual project was reviewed in the context of the Town's proposed schedule for implementation and in consideration of the applicable MCEA Schedule (i.e. Schedule A, A+, B or C) to determine which projects can proceed to implementation following completion of the Master Plan and those which will require further study.

The purpose of this memo is to document the additional site-specific assessment completed for the Hanly Street Schedule B project (Alternative 3A) to demonstrate that Class EA requirements have been fulfilled allowing the municipality to proceed to implementation following completion of this Master Plan. This memo documents Phases 1 and 2 of the MCEA process and provides additional details pertaining to the existing conditions of the site, the alternative solutions considered, the potential to impact the environment (i.e. natural, socio-economic and cultural) and the mitigation measures recommended to minimize impacts. This material has been prepared to supplement the information included in the Master Plan document.

While there are several Schedule B projects included as part of the Preferred Strategy only the assessment completed for Alternative 3A (Upgrade Hanley Booster Pump Station) is documented in this memo given that it is a short term project and likely to proceed as a Schedule B undertaking. A memo was not prepared for the other Schedule B projects making up the Preferred Strategy as they were either long-term projects that would not advance to construction for another 15 to 20 years and would therefore be reviewed further when the 5 year update to the Master Plan is completed and / or the details of the work proposed cannot be confirmed at this time which may result in a re-classification of the MCEA schedule.

2. Phase 1 Problem/Opportunity Statement

Following a review of the existing water servicing infrastructure and a review of the existing and anticipated future demands the following summarizes the overall problem and / or opportunities to be addressed by this Class EA:

- **Problem:** Moderate near and long term growth is expected in the Town of Midland. As such, there is a need for improving water production/supply and servicing in a sustainable manner that can be logically phased. Additional infrastructure and improvements to the existing system must be in place in a timely and orderly manner to service approved growth. A detailed cost phasing and implementation plan is required to allow the Town to develop a capital works program and budget.
- **Opportunities:** To develop a water utility-infrastructure master plan or “road map” that will support future capital works planning and funding opportunities and meet the needs of existing and future water customers.

With respect to the problem/opportunities associated with the specific Hanly Street BPS site it relates to capacity deficiencies. The Lescaut and Sunnyside pressure zones do not have sufficient pump capacity to meet projected water demands and fire flow demands. To address pump capacity requirements in the Lescaut zone upgrades are required to the existing municipal Booster Pump Station located at Hanly Street. An additional duty pump and fire pump with a capacity of 79 l/s are required at this location to provide the needed capacity. Since two pumps are needed as part of the upgrade to this BPS a building expansion will be required. Given that this improvement requires a change in footprint it will be classified as a Schedule B project. (see MCEA, October 2000, as amended 2007, 2011, & 2015 - Water Project Description #4, pg. 1-16).

3. Existing Conditions at Hanly Street Facility

Technical Environment

Existing Facility: The existing Booster Pump Station is located at 365 Hanly Street on lands currently owned by the municipality. The existing site consists of a small building that provides a BPS and a separate elevated storage tank. The site provides sufficient area for expansion without the need to acquire additional lands. (see **Attachment 1**, Photos).

Socio-Economic Environment

Existing/Future Land Use: All lands immediately adjacent to the subject site are developed with single family residential dwellings. The current Official Plan designates this area as *Residential District* (Schedule ‘A’) and it is expected that the area will remain a primarily residential area. (see **Attachment 2**, Official Plan Schedule ‘A’).

Noise:	Adjacent properties consist primarily of existing residential dwellings making this a noise sensitive area.
<u>Natural Environment</u>	
Terrestrial Habitat and Communities:	The subject site is an existing municipally owned property that consists of a small pumphouse and elevated storage tank with a paved driveway. The remainder of the site is primarily manicured lawn with a few mature trees at the perimeter of the site. Given the developed nature of the surrounding lands and the lack of vegetation on the site there is minimal habitat available and it is expected that area wildlife consists primarily of those species accustomed to an urban area (i.e. racoons, squirrels, chipmunks, etc.). (see Attachment 1 , Photos).
Aquatic Habitat and Communities:	There are no watercourses or waterbodies present on the site or on adjacent lands. There are no fish and fish habitat or other aquatic species concerns associated with this property.
Designated Areas:	There are no Provincially Significant Wetlands (PSW) or Areas of Natural & Scientific Interest (ANSI) within or adjacent to the site.
Groundwater & Source Protection:	The Town of Midland is located within the <i>Severn Sound Source Protection Area</i> and is subject to the <i>South Georgian Bay Lake Simcoe Source Protection Plan</i> . The site is located within a Wellhead Protection Area. The Significant threats for the vulnerable areas at this location are included in Attachment 3 . Measures to mitigate potential impacts to groundwater will need to be applied in accordance with the South Georgian Bay Lake Simcoe Source Protection Plan. Source Protection Mapping obtained from the MECP’s Source Protection Atlas are included in Attachment 3 .
<u>Cultural Environment</u>	
Built Heritage / Cultural Heritage Landscapes	The Town’s heritage register was reviewed to determine if there are any cultural heritage properties in the area that are designated under the Ontario Heritage Act and on the municipal register or if there are any properties that have not been formally designated but are of cultural heritage interest. There are no such heritage resources on the property or on adjacent lands.
Archaeological	Given that the site has not been previously assessed it will require a Stage 1 and possibly a Stage 2 assessment in advance of construction to clear the area of archaeological concerns.

4. Phase 2 Alternative Solutions

As part of this Master Plan process several Alternative Solutions were carried forward to address capacity deficiencies. These included the following:

- **Alternative 3** – Do Nothing (Included as part of MCEA process and used as a benchmark to gauge the potential for impact)
- **Alternative 3A** – Pump Station upgrades at Hanly Street.
- **Alternative 3B** – Dedicate Well 15 to the Lescaut Zone
- **Alternative 3C** – Pump Station upgrades at Everton.

Attachment 4 is an excerpt of the Evaluation Matrix presented at PIC No. 2 that illustrates the evaluation of the above alternatives and the rationale for the selection of the Preferred Solution to address capacity deficiencies. As shown, the potential for the alternatives to impact the natural, socio-economic, and cultural environment was reviewed as well as technical considerations. Based on this review Alternative 3A and Alternative 3C were identified at PIC No. 2 as being the preliminary Preferred Alternatives to address capacity deficiencies. For additional information pertaining to this review, please refer to the Master Plan document.

5. Potential for Hanly St. BPS Upgrades to Impact Area Environment:

A conceptual plan identifying the potential footprint change associated with Alt. 3A is illustrated in **Attachment 5**. The potential for the proposed upgrade at Hanly Street to impact the area environment (natural, socio-economic, and cultural) is further discussed below:

- Natural: Given that the site is an existing municipal property that is primarily manicured lawn with limited vegetation, there is a low potential to impact mature trees, wildlife and habitat, including Species at Risk. The anticipated location of the proposed building expansion will be directly adjacent to the existing, centrally located within the property, at a location with the least potential for impact.

- Socio-Economic There is an increased potential for construction to result in noise impacts given the residential nature of the surrounding lands. However, noise impacts will be temporary and limited to the period of construction. Standard noise mitigation can assist in reducing impacts during the construction period. Alt. 3C is situated in a rural area and the upgrades will therefore have a lower potential to impact area residents, businesses, aesthetics, and noise as compared to the other alternatives.

- Cultural: There is no potential to impact Built Heritage resources. However, A Stage 1 and 2 Archaeological Assessment should be undertaken to clear the area of archaeological concerns prior to construction.

6. Consultation Summary

Public/Agency/Indigenous Community Notification: In accordance with the Municipal Class EA Process, the public was notified of this undertaking through a published Notice of Commencement / Public Information Centre No. 1 in two editions of the local newspaper, the Midland Mirror, on January 17 & 24, 2019. Letters were also issued to relevant agencies and Indigenous communities. Comments received were primarily from area developers expressing interest in the Master Plan as it affects their respective developments.

Public Open Houses: The first of two Public Information Centres (PICs) was presented in an online format with material available February 6, 2019. The municipality hosted PIC No. 2 on May 30, 2019 utilizing an informal, drop-in style format. Key stakeholders received a special invitation to attend the hour in advance of the main meeting to meet with Town representatives. Key concerns related to potential servicing for future developments, the implementation schedule, connection of the Midland and Penetanguishene municipal water systems, and the testing of municipal water systems. No questions or concerns specific to the Hanly Street site and project were submitted.

Municipal Website: All public notices and PIC displays were posted on the Town's project-specific website at www.midland.ca.

Notice of Completion: The Hanly Street Booster Pump Station upgrade project was specifically identified in the Master Plan Notice of Completion.

Review Agency and Indigenous Community Consultation: All notifications regarding the Master Plan were also circulated to relevant agencies and Indigenous Communities. Agency input and Indigenous Community responses were minimal during the Class EA. No comments were received from agencies or Indigenous Communities following PIC No. 2. A follow up phone call / email was completed with Indigenous Communities in Dec. 2019 / Jan. 2020 to make certain that they received the earlier notifications and to confirm their level of interest. For additional details please refer to the Master Plan document prepared for this undertaking.

7. Mitigation and Future Commitments

Please refer to **Attachment 6**, Summary of Environmental Concerns and Mitigation Measures Table, for additional details relating to key concerns during construction and recommended mitigation. Key mitigation recommended for this project includes the following:

- A Stage 1 and 2 archaeological assessment of the subject site is recommended in advance of construction to clear the site of archaeological concerns.
- Standard measures to address erosion and sediment control during construction are recommended to minimize sediment entry into roadside drainage.
- Source Protection - Monitoring of the municipal well before, during and after construction should be completed and other measures applied for the protection of groundwater in accordance with the *South Georgian Bay Lake Simcoe Source Protection Plan*.
- Disturbed areas should be restored post construction.
- Notification should be provided to adjacent residents in advance of construction.
- Construction should adhere to the municipal Noise By-Law 2009-104 and utilize standard noise mitigation measures to minimize impacts.

8. Master Plan Conclusions and Recommendations

Conclusions: The proposed upgrades to the existing Booster Pump Station can be constructed with manageable impacts to the natural, socio-economic, and cultural environment. Mitigation as proposed will assist in keeping impacts to a minimum.

Recommendations: Subject to Municipal Class EA clearance (approval within the Master Plan), the upgrades to the Hanly Street BPS (Alt. 3A) can proceed to preliminary and detailed design. The detail design commitments summarized in Section 6 above and further described in **Attachment 6** should be adhered to during design and construction.

ATTACHMENTS

ATTACHMENT 1

Site Photos

ATTACHMENT 1: SITE PHOTOS

Image 1: Street view - From Hanly Street looking South



Image 2: Street view - From Hanly Street Looking Southwest



Image 3: Street View - From Hanly Street Looking Southeast



Image 4: Plan View (County of Simcoe GIS Mapping)



ATTACHMENT 2

Town of Midland Official Plan Schedule 'A'

TOWN OF MIDLAND



OFFICIAL PLAN LAND USE SCHEDULE 'A'

TOWN OF PENETANGUISENE

Waste Disposal Assessment Area 500 m

Limits of Former Landfill

SECONDARY PLAN
Subject to Section 3.6.6

EXCEPTION
Subject to Section 3.3.13.7

SPECIAL POLICIES
Subject to Section 3.3.7

GEORGIAN BAY

TOWNSHIP OF TINY

SPECIAL POLICIES
Subject to Section 3.3.13.5

LITTLE LAKE

SPECIAL POLICIES
Subject to Section 3.3.13.6

SPECIAL POLICIES
Subject to Section 3.3.7

AGGREGATE RESOURCES
Subject to Section 3.6.5

SECONDARY PLAN
Subject to Section 3.6.6

SPECIAL POLICIES
Subject to Section 3.1.6.1

AGGREGATE RESOURCES
Subject to Section 3.6.5

THIS IS SCHEDULE "A" TO
OFFICIAL PLAN AMENDMENT
No. 1 TO THE OFFICIAL PLAN
OF THE TOWN OF MIDLAND

Legend

- Employment Areas
- Downtown District
- Residential District
- Open Space District
- Environmental Protection
- Restricted Rural
- Waterfront Mixed-Use

TOWNSHIP OF TAY

WYE MARSH

DRAWN BY: TOWN OF MIDLAND PLANNING DEPARTMENT
DATE: FEBRUARY 2004
OFFICE CONSOLIDATION: NOVEMBER 2017

ATTACHMENT 3

Source Protection

Search By

Result Details

Searched By:
Address
Value:
365 Hanly Street, MIDLAND, ONTARIO

Water Quality | Policy Search by SPA | Water Quantity

Location Information

Zoom in to confirm your location and results.

Latitude: **44.74281** Longitude: **-79.87206**
UTM Zone: **17** Easting: **589296.12**
Northing: **4954998.99**
Upper Tier Municipality: **COUNTY OF SIMCOE**
Lower/Single Tier Municipality: **TOWN OF MIDLAND**
Township Concession and Lot: **TAY CON 2 EAST OF PENETANGUISHENE ROAD, LOT 104**
Assessment Parcel Address: **365 HANLY ST**
Assessment Roll #: **4374020011050000000**
MECP District: **Barrie**
MECP Region: **Central**

Source Protection Details for Location

Source Protection Area: **Severn Sound**
Wellhead Protection Area: **A** ; score is **10**
Wellhead Protection Area E (GUDI): **No**
Intake Protection Zone: **No**
Issue Contributing Area: **No**
Significant Groundwater Recharge Area: **No**
Highly Vulnerable Aquifer: **No**
Event Based Area: **No**
Wellhead Protection Area Q1: **Yes** ; Stress: **Moderate**
Wellhead Protection Area Q2: **Yes** ; Stress: **Moderate**
Intake Protection Zone Q: **No**

The Significant threats for the vulnerable areas at this location can be found at this [link](#).

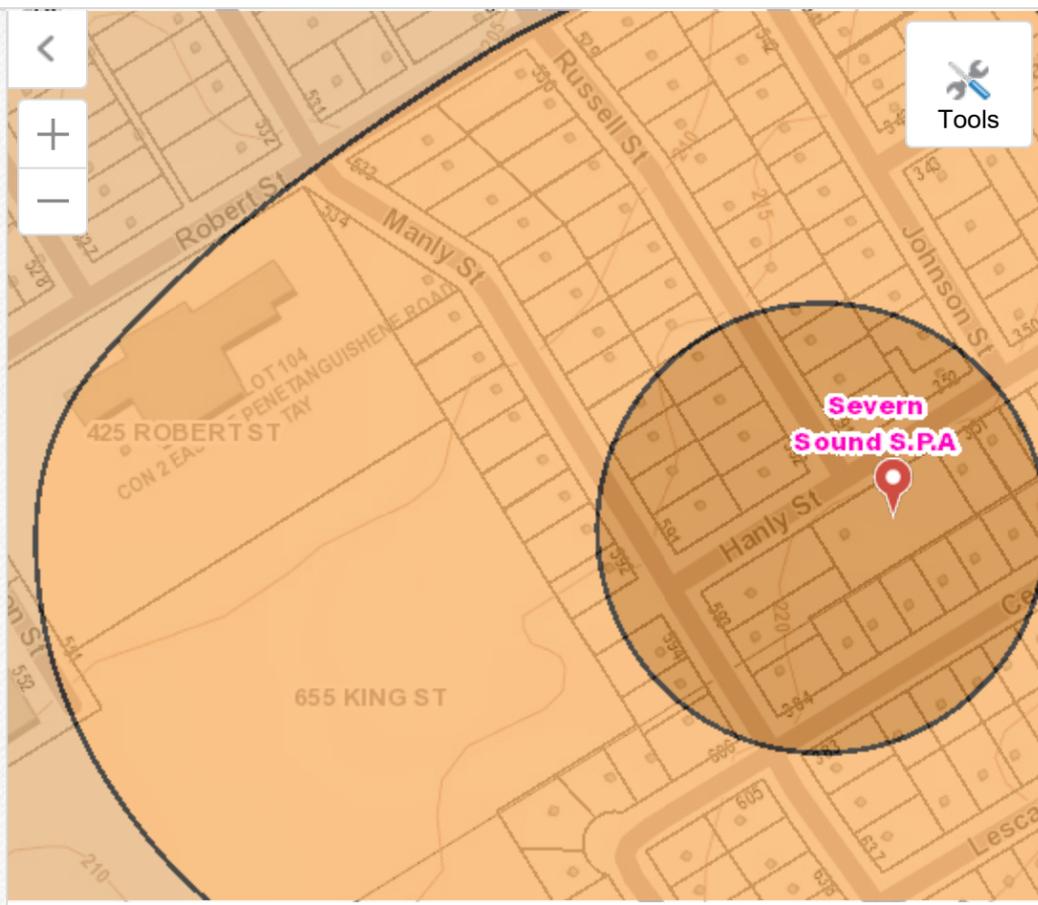
Use the Policy search tab to see if any policies apply – for more details see the [source protection plan](#)

Information is current as of: **January 31st, 2019**

Map Legend

Help and Resources

About



Threats

Threat Sub Category	Risk	Vulnerable Area / Score	Parameter of Concern
The Application of Hauled Sewage to Land	Significant	A (10)	Chemical
The Application of Hauled Sewage to Land	Significant	A (10)	Pathogen
Storage, Treatment And Discharge Of Tailings From Mines	Significant	A (10)	Chemical
Waste Disposal Site - Landfarming Of Petroleum Refining Waste	Significant	A (10)	Chemical
Waste Disposal Site - Landfilling (Hazardous Waste)	Significant	A (10)	Chemical
Waste Disposal Site - Landfilling (Municipal Waste)	Significant	A (10)	Chemical
Waste Disposal Site - Landfilling (Solid Non Hazardous Industrial or Commercial)	Significant	A (10)	Chemical
Waste Disposal Site - Liquid Industrial Waste Injection into a well	Significant	A (10)	Chemical
Waste Disposal Site - PCB Waste Storage	Significant	A (10)	Chemical
Waste Disposal Site - Storage Of Hazardous Waste At Disposal Sites	Significant	A (10)	Chemical
Waste Disposal Site - Storage of wastes described in clauses (p), (q), (r), (s), (t) or (u) of the definition of hazardous waste	Significant	A (10)	Chemical
Sewage System or Sewage Works - Stormwater Management Facility	Significant	A (10)	Chemical
Sewage System Or Sewage Works - Sanitary Sewers and related pipes	Significant	A (10)	Chemical
Sewage System Or Sewage Works - Sanitary Sewers and related pipes	Significant	A (10)	Pathogen
Sewage System or Sewage Works - Onsite Sewage Systems	Significant	A (10)	Chemical

Threat Sub Category	Risk	Vulnerable Area / Score	Parameter of Concern
Sewage System or Sewage Works - Onsite Sewage Systems	Significant	A (10)	Pathogen
Sewage System or Sewage Works - Onsite Sewage Systems Holding Tanks	Significant	A (10)	Chemical
Sewage System or Sewage Works - Onsite Sewage Systems Holding Tanks	Significant	A (10)	Pathogen
Sewage System Or Sewage Works - Sewage Treatment Plant Effluent Discharges (Includes Lagoons)	Significant	A (10)	Chemical
Sewage System Or Sewage Works - Sewage Treatment Plant Effluent Discharges (Includes Lagoons)	Significant	A (10)	Pathogen
Sewage System or Sewage Works - Sewage Storage - Treatment or Holding Tanks	Significant	A (10)	Chemical
Sewage System or Sewage Works - Sewage Storage - Treatment or Holding Tanks	Significant	A (10)	Pathogen
Application Of Agricultural Source Material (ASM) To Land	Significant	A (10)	Chemical
Application Of Agricultural Source Material (ASM) To Land	Significant	A (10)	Pathogen
Storage Of Agricultural Source Material (ASM)	Significant	A (10)	Chemical
Storage Of Agricultural Source Material (ASM)	Significant	A (10)	Pathogen
Application of Non-Agricultural Source Material (NASM) or Biosolids to Land	Significant	A (10)	Chemical
Application of Non-Agricultural Source Material (NASM) or Biosolids to Land	Significant	A (10)	Pathogen
Storage of Non-Agricultural Source Material (NASM)	Significant	A (10)	Chemical
Storage of Non-Agricultural Source Material (NASM)	Significant	A (10)	Pathogen
Application Of Commercial Fertilizer To Land	Significant	A (10)	Chemical

Threat Sub Category	Risk	Vulnerable Area / Score	Parameter of Concern
Storage Of Commercial Fertilizer	Significant	A (10)	Chemical
Application Of Pesticide To Land	Significant	A (10)	Chemical
Storage Of A Pesticide	Significant	A (10)	Chemical
Application Of Road Salt	Significant	A (10)	Chemical
Storage Of Road Salt	Significant	A (10)	Chemical
Storage Of Snow	Significant	A (10)	Chemical
Handling Of Fuel	Significant	A (10)	Chemical
Storage Of Fuel	Significant	A (10)	Chemical
Handling Of A Dense Non Aqueous Phase Liquid (DNAPL)	Significant	A (10)	Chemical
Storage Of A Dense Non Aqueous Phase Liquid (DNAPL)	Significant	A (10)	Chemical
Storage Of An Organic Solvent	Significant	A (10)	Chemical
Management Of Runoff Containing Chemicals Used In The De-Icing Of Aircrafts	Significant	A (10)	Chemical
Management Or Handling Of Agricultural Source Material - Agricultural Source Material (ASM) Generation (Grazing and pasturing)	Significant	A (10)	Chemical
Management Or Handling Of Agricultural Source Material - Agricultural Source Material (ASM) Generation (Grazing and pasturing)	Significant	A (10)	Pathogen
Management Or Handling Of Agricultural Source Material - Agricultural Source Material (ASM) Generation (Yards or confinement)	Significant	A (10)	Chemical

Threat Sub Category	Risk	Vulnerable Area / Score	Parameter of Concern
Management Or Handling Of Agricultural Source Material - Agricultural Source Material (ASM) Generation (Yards or confinement)	Significant	A (10)	Pathogen
Pipelines above ground	Significant	A (10)	Chemical
Pipelines within or under a water body	Significant	A (10)	Chemical
Pipelines below ground	Significant	A (10)	Chemical

ATTACHMENT 4

Evaluation Matrix – Capacity

(PIC No. 2 excerpt)

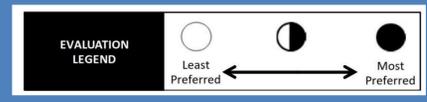
TABLE 3: EVALUATION OF SHORT LIST CAPACITY ALTERNATIVES



EVALUATION CRITERIA		ALT 3 Do Nothing	ALT 3A Pump Station Upgrades at Hanley St.	ALT 3B Dedicate Well 15 to Lescaut Zone	ALT 3C Pump Station Upgrades at Everton	RATIONALE
	TECHNICAL ENVIRONMENT <ul style="list-style-type: none"> Operational Complexity Energy Use Ability to Mitigate Known Issues Ease of implementation/ complexity of phasing Amount of new infrastructure required 	○	◐	◐	●	<ul style="list-style-type: none"> Alt. 3 proposes no changes to the system so there would be no changes to the operational complexity and it would not address key deficiencies. Alt. 3B dedicates Well 15 to the Lescaut Pressure Zone and utilizes/optimizes existing infrastructure, while still requiring a new fire pump at Hanly PS Alt. 3A and 3C both propose upgrades to the an existing pump station in the form of additional duty pump and a fire pump and will have a similar positive impact. Both alternatives will result in a new operating procedure and a higher pump capacity with new pumps to maintain. Alt. 3A and 3C both propose upgrades that will result in increased energy use due to higher capacity pumps. Alt. 3B will have minimal impact on energy use. Alt. 3 proposes no improvements so existing deficiencies would continue with no optimization. Alts. 3B, 3A and 3C propose upgrades that maximize existing infrastructure. Alts. 3B & 3A will provide increased fire flow supply capacity in Lescaut Zone (issue "F") Alt. 3C will provide more sustainable water service for future development (issue "L"). Alts. 3B, 3A and 3C propose upgrades that can be accommodated at the existing location and facilitate future phasing. Alt. 3A and 3C propose upgrades and will require a similar amount of new infrastructure. Alt. 3A and Alt 3C require new duty and fire pump at the Hanly BPS and at the Everton BPS respectively. Alt. 3B requires only new fire pump.
	NATURAL ENVIRONMENT <ul style="list-style-type: none"> Terrestrial Wildlife (including Species at Risk) & Vegetation Fisheries / Aquatic Surface Water / Groundwater 	●	●	●	●	<ul style="list-style-type: none"> Since Alt. 3 proposes no changes there is no potential to impact area wildlife, fish/fish habitat, vegetation, surface water or groundwater. Alts. 3A, 3B and Alt. 3C propose upgrades that will not change the overall footprint and will therefore have a similar low potential to impact area natural heritage features.
	SOCIAL ENVIRONMENT <ul style="list-style-type: none"> Land Use / Residential & Business Impacts Noise / Air Quality / Aesthetics Climate Change 	○	◐	◐	●	<ul style="list-style-type: none"> Alt. 3 proposes no changes to the system so it cannot accommodate planned growth and is therefore not in conformance with land use policies. Alts. 3A, 3B, and 3C propose improvements to accommodate planned growth and are in conformance with land use policies. Alts 3A, 3B and 3C propose upgrades within an existing facility; however, Alt. 3C is situated in a rural area and will have a lower potential to impact area residents & businesses, aesthetics, noise and etc. Climate Change – All three options propose the use of existing infrastructure which will minimize impacts to the area environment which will minimize impacts to climate change. The upgrades at the pump stations could include energy efficiencies to assist in reducing impacts to climate change.
	CULTURAL ENVIRONMENT <ul style="list-style-type: none"> Archaeological Built Heritage and Cultural Heritage Landscapes 	●	◐	◐	◐	<ul style="list-style-type: none"> Alt. 3 proposes no construction so there is no potential to impact heritage resources. Alts. 3A, 3B and Alt. 3C propose upgrades that will not change the overall footprint and will therefore have a low potential to impact heritage resources.
	ECONOMIC ENVIRONMENT <ul style="list-style-type: none"> Construction Costs / Property acquisition & Operating & Maintenance Costs 	◐	◐	●	◐	<ul style="list-style-type: none"> Alt. 3 proposes no construction, but operating/maintenance costs may increase over time as the system deteriorates. Property acquisition is not required to accommodate any of the alternatives under consideration. Dedicating a well as proposed with Alt. 3B will be cheaper than an upgrade as proposed with Alts. 3A or 3C and will also have cheaper operating / maintenance costs.
	OVERALL SCORING	○	◐	◐	●	

NOTE: The "Do Nothing" alternative (Alt 3) does not address key deficiencies and is not considered a viable option. As part of the Class EA process it is included as a benchmark to gauge the potential for impact.

↑ ↑ **PREFERRED CAPACITY ALTERNATIVES**



ATTACHMENT 5

Conceptual Plan and Preliminary Cost Estimate



Potential Building Expansion
(Conceptual)

Hanly St

Russell St

Hanly ET



Hanly BPS

Existing Building Footprint

Parcel Boundary

To:

Andy Campbell
Director of Engineering, Water and Wastewater
Services
575 Dominion Ave.
Midland, ON, L4R 1R2

CC:

Randy Provencal (AECOM)
Karl Grueneis (AECOM)
Benny Wan (AECOM)
Andrea Potter (AECOM)

Project name:

Town of Midland Waterworks Master Plan

Project ref:

60593529

From:

Semyon Chaymann

Date:

July 5 2019

Memorandum

As part of the Town of Midland Waterworks Master Plan, AECOM has prepared cost estimates for the preferred servicing strategy and associated projects. The estimates are based on previous AECOM construction and project management experience. The costs are separated into "Preliminary Studies and Approvals" and "Proposed Works". It is assumed that all project would require a preliminary study, environmental approvals and mitigations, and land acquisition. Therefore, allowances have been included in the cost estimates. However, it is the intention of this memorandum to confirm such assumptions with the Town. Assumptions were also made regarding contingency costs; contractor overhead and profit is estimated at 10% of capital and preliminary costs, estimating contingencies are assumed to be 30% of the sub-total. Engineering design and construction services costs are estimated at 10% for storage tank cost, and 15% for pump station and watermain projects.

Table 1 provides a summary of the cost estimate for the preferred alternatives that forms the overall servicing strategy for the Town of Midland. Details of the cost estimates for each project follow.

Table 1: Summary of Cost Estimates

Issue # and Goal	Preferred Alternative	Description of Alternative	Pipe Length (m)	Pipe Diameter (mm)	Storage and Type (ML)	Number of Pumps	Pumps Flow (L/s)	Pumps Head (m)	Well Capacity (L/s)	Treatment (L/s)	Conceptual Cost (CAD)	Phasing	Growth*	Non-Growth*
#1 – Increase Water Storage Capacity	1A	Install a new tank in the area of Wells 7A/7B			5.38ML - Elevated @ 35m						\$ 9,779,000	Long Term (15 - 20 Years)	90%	10%
#2 – Increase Water Supply Capacity	2A	Existing Sundowner Well can be commissioned to provide supply to West Zone				2	60 L/s	58.8m	5MLD (based on Sundowner Booster PS)	5MLD (based on Sundowner Booster PS)	\$ 5,555,000	Long Term (15 - 20 Years)	90%	10%
#3 – Increase Pumping Capacity	3A	Upgrade pump capacity of Hanly BPS				2	79L/s Fire and 10L/s Duty	69m			\$ 2,335,000	Short Term (1-5 years)	10%	90%
	3C	Upgrade pump capacity of Everton BPS				1	64 L/s Fire Pump	21m				Short Term (1-5 years)	10%	90%
#4 – Address Low Pressure Area Servicing	4A	New Pressure Zone with new Booster Pump Station	1400	300		4	3 pumps 10.5 L/s 1 Fire Pump @ 144 L/s	26m			\$ 6,333,000	Mid. Term (5-10 Years)	10%	90%
#4 – Address Low Pressure Area Servicing	4B	New Trunk Watermain along Highway 93	3000	300							\$ 5,877,000	Long Term (15 - 20 Years)	100%	0%
#5 – Provide Redundancy of Supply to Sunnyside	5A	Watermain Twinning on Harbourview Drive	700	300							\$ 2,319,000	Short Term (1-5 years)	10%	90%
#6 – Commission Balm Beach Road BPS	Recommended without alternative	Booster Pump Station at Balm Beach	1200	300		3	3 pump 1L/s 1 Fire Pump 38L/s	42m			\$ 3,351,000	Long Term (15 - 20 Years)	100%	0%
#7 - Abandon old infrastructure	Recommended without alternative	Abandon Wells 12, 1A and use it as monitoring wells									\$ 100,000	Short Term (1-5 years)	10%	90%
	Recommended without alternative	Decommission Dominion and Montreal Standpipe									\$ 2,000,000	Long Term (15 - 20 Years)	90%	10%

*Guidelines applied to develop growth/non-growth split:

1. If triggered by growth and benefits only new customers – 100% growth
2. If not triggered by growth and benefits only new customers – 100% non-growth
3. If triggered by growth and primarily benefits development - 90% growth and 10% non-growth
4. If triggered by existing deficiency and primarily benefits existing customers – 10% growth and 90% non-growth

MIDLAND WATER MASTER PLAN
CONCEPTUAL COST ESTIMATE

ISSUE #1 - Insufficient Water Storage Capacity

Description of Issue: Insufficient Storage in the East Zone

Solution: Install a new tank in the area of Wells 7A/7B

<i>Item</i>	<i>Description</i>	<i>Units</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Total</i>
0	<i>Preliminary Studies and Approvals</i>				
0.1	Preliminary Study	LS	1	\$50,000	\$50,000
0.2	Environmental Approvals & Mitigation	LS	1	\$50,000	\$50,000
0.3	Land acquisition (Allowance)	LS	1	\$50,000	\$50,000
Subtotal Preliminary Studies and Approvals					\$150,000
1	<i>Proposed Works</i>				
1.1	Connections - at each end	Ea.	2	\$100,000	\$200,000
1.2	Elevated Tank (5.28ML)	LS	1	\$6,000,000	\$6,000,000
Subtotal Proposed Works					\$6,200,000
SUBTOTAL					\$6,350,000
<i>Contractor overhead and profit on Sub Total (10%)</i>					\$635,000
<i>Estimating Contingencies on Sub Total (30%)</i>					\$1,905,000
TOTAL					\$8,890,000
<i>Engineering Design and Construction Services on Total (10%)</i>					\$889,000
GRAND TOTAL					\$9,779,000

MIDLAND WATER MASTER PLAN
CONCEPTUAL COST ESTIMATE

ISSUE #2 - Increase Water Supply Capacity

Description of Issue: Insufficient supply by 2041, need additional water supply source

Solution: Commission existing Sundowner well to provide supply to West Zone

<i>Item</i>	<i>Description</i>	<i>Units</i>	<i>Quantity</i>	<i>Unit Price</i>	<i>Total</i>
0	<i>Preliminary Studies and Approvals</i>				
0.1	Preliminary Study	LS	1	\$50,000	\$50,000
0.2	Environmental Approvals & Mitigation	LS	1	\$50,000	\$50,000
0.3	Land acquisition	LS	1	\$50,000	\$50,000
Subtotal Preliminary Studies and Approvals					\$150,000
1	<i>Proposed Works</i>				
1.1	New Well Pumps	LS	1	\$100,000	\$100,000
1.2	Water Treatment Facility (Building, Equipment, Installation)	LS	1	\$3,000,000	\$3,000,000
1.3	Disinfection system	LS	1	\$100,000	\$100,000
1.4	Connections	LS	1	\$100,000	\$100,000
Subtotal Proposed Works					\$3,300,000
SUBTOTAL					\$3,450,000
<i>Contractor overhead and profit on Sub Total (10%)</i>					\$345,000
<i>Estimating Contingencies on Sub Total (30%)</i>					\$1,035,000
TOTAL					\$4,830,000
<i>Engineering Design and Construction Services on Total (15%)</i>					\$724,500
GRAND TOTAL					\$5,555,000

MIDLAND WATER MASTER PLAN
CONCEPTUAL COST ESTIMATE

ISSUE #3 - Insufficient Pumping Capacity

Description of Issue: Sunnyside and Lescaut Pressure Zones do not have sufficient pumping capacities and sufficient fire flow availability

Solution: Alternatives 3A & 3C - Upgrade pump capacity of Hanly BPS and Everton BPS

Item	Description	Units	Quantity	Unit Price	Total
0	Preliminary Studies and Approvals				
0.1	Preliminary Study	LS	1	\$50,000	\$50,000
0.2	Environmental Approvals & Mitigation	LS	1	\$50,000	\$50,000
0.3	Land acquisition	LS	1	\$50,000	\$50,000
Subtotal Preliminary Studies and Approvals					\$150,000
1	Proposed Works				
1.1	Hanly BPS Upgrade 1 Duty Pump 10L/s @69m TDH and 1 Fire Pump 79 L/s @69m TDH	LS	2	\$100,000	\$200,000
1.2	Building Expansion, MCC upgrades and Piping	LS	1	\$1,000,000	\$1,000,000
1.3	Everton BPS Upgrade 1 Fire Pump 64 L/s @21m TDH	LS	1	\$100,000	\$100,000
1.4	Building Expansion, MCC upgrades and Piping	LS	1	\$1,000,000	\$1,000,000
Subtotal Proposed Works					\$1,300,000
SUBTOTAL					\$1,450,000
<i>Contractor overhead and profit on Sub Total (10%)</i>					\$145,000
<i>Estimating Contingencies on Sub Total (30%)</i>					\$435,000
TOTAL					\$2,030,000
<i>Engineering Design and Construction Services on Total (15%)</i>					\$304,500
GRAND TOTAL					\$2,335,000

MIDLAND WATER MASTER PLAN
CONCEPTUAL COST ESTIMATE

ISSUE #4 - Low Pressure Area Servicing

Description of Issue: Areas along Highway 12, east of King Street, are experiencing low pressure.

Solution: Alternative 5A - New Pressure zone via booster pump station

Item	Description	Units	Quantity	Unit Price	Total	
0	Preliminary Studies and Approvals					
0.1	Preliminary Study	LS	1	\$50,000	\$50,000	
0.2	Environmental Approvals & Mitigation	LS	1	\$50,000	\$50,000	
0.3	Land acquisition (Allowance)	LS	1	\$50,000	\$50,000	
Subtotal Preliminary Studies and Approvals					\$150,000	
1	Proposed Works					
1.1	Connections - at each end	ea	2	\$100,000	\$200,000	
1.2	Chamber for future ET connection	ea	1	\$100,000	\$100,000	
1.3	3 Pumps 10.5 L/s @26m TDH and 1 Fire Pump 144L/s @26m TDH (including Pump Station Building)	LS	1	\$1,000,000	\$1,000,000	
1.4	Watermain between Wells 7A/7B and new storage tank (300mm)	m	750	\$1,151	\$863,250	
1.5	Watermain between the new storage tank and east Zone (400mm)	m	750	\$1,360	\$1,020,000	
1.6	Air release chambers	ea	2	\$100,000	\$200,000	
1.7	Check valves	ea	2	\$100,000	\$200,000	
1.8	Standby Power Unit (115kw)	ea	1	\$200,000	\$200,000	
Subtotal Proposed Works					\$3,783,250	
SUBTOTAL					\$3,933,250	
					<i>Contractor overhead and profit on Sub Total (10%)</i>	\$393,325
					<i>Estimating Contingencies on Sub Total (30%)</i>	\$1,179,975
TOTAL					\$5,506,550	
					<i>Engineering Design and Construction Services on Total (15%)</i>	\$825,983
GRAND TOTAL					\$6,333,000	

MIDLAND WATER MASTER PLAN
CONCEPTUAL COST ESTIMATE

ISSUE #4 - Low Pressure Area Servicing

Description of Issue: Areas along Highway 12, east of King Street, are experiencing low pressure.

Solution: Alternative 4B - new trunk watermain along County Road 93

Item	Description	Units	Quantity	Unit Price	Total	
0	Preliminary Studies and Approvals					
0.1	Preliminary Study	LS	1	\$50,000	\$50,000	
0.2	Environmental Approvals & Mitigation	LS	1	\$50,000	\$50,000	
0.3	Land acquisition	LS	1	\$50,000	\$50,000	
Subtotal Preliminary Studies and Approvals					\$150,000	
1	Proposed Works					
1.1	Connections - at each end	ea	2	\$100,000	\$200,000	
1.2	3000m of new 300mm watermain	m	3000	\$900	\$2,700,000	
1.3	Air release chambers	ea	3	\$100,000	\$300,000	
1.4	PRV Chambers for New Pressure Zone	ea	1	\$200,000	\$200,000	
1.5	Connections - hydrants; local	ea	20	\$5,000	\$100,000	
1.6	Watermain isolation valves	ea	10	\$5,000	\$50,000	
Subtotal Proposed Works					\$3,500,000	
SUBTOTAL					\$3,650,000	
					<i>Contractor overhead and profit on Sub Total (10%)</i>	\$365,000
					<i>Estimating Contingencies on Sub Total (30%)</i>	\$1,095,000
TOTAL					\$5,110,000	
					<i>Engineering Design and Construction Services on Total (15%)</i>	\$766,500
GRAND TOTAL					\$5,877,000	

MIDLAND WATER MASTER PLAN
CONCEPTUAL COST ESTIMATE

ISSUE #5 - Lack of Redundancy of Supply to Sunnyside Area

Description of Issue: Sunnyside and areas north of Vindin Street are supplied only via one watermain along Harbourview Drive

Solution: Alternative 5A - Twin Harbourview Drive

Item	Description	Units	Quantity	Unit Price	Total	
0	Preliminary Studies and Approvals					
0.1	Preliminary Study	L.S.	1	\$50,000	\$50,000	
0.2	Environmental Approvals & Mitigation	L.S.	1	\$50,000	\$50,000	
0.3	Land acquisition	L.S.	1	\$50,000	\$50,000	
Subtotal Preliminary Studies and Approvals					\$150,000	
1	Proposed Works					
1.1	Connections - at each end	ea	2	\$100,000	\$200,000	
1.2	New 300mm Watermain twinning	m	700	\$900	\$630,000	
1.3	Water course/ railroad crossings (allowance)	m	200	\$1,800	\$360,000	
1.4	Air release chambers	ea	1	\$100,000	\$100,000	
Subtotal Proposed Works					\$1,290,000	
SUBTOTAL					\$1,440,000	
					<i>Contractor overhead and profit on Sub Total (10%)</i>	\$144,000
					<i>Estimating Contingencies on Sub Total (30%)</i>	\$432,000
TOTAL					\$2,016,000	
					<i>Engineering Design and Construction Services on Total (15%)</i>	\$302,400
GRAND TOTAL					\$2,319,000	

MIDLAND WATER MASTER PLAN
CONCEPTUAL COST ESTIMATE

ISSUE #6 - Low Pressure along Balm Beach Road for Future Development

Description of Issue: Areas along Balm Beach Road, west of Sundowner Well, would experience low pressure if connected to the existing West Zone

Solutions: Commission Booster Pump Station at Balm Beach Road

Item	Description	Units	Quantity	Unit Price	Total
0	<i>Preliminary Studies and Approvals</i>				
0.1	Preliminary Study	L.S.	1	\$50,000	\$50,000
0.2	Environmental Approvals & Mitigation	L.S.	1	\$50,000	\$50,000
0.3	Land acquisition (Allowance)	L.S.	1	\$50,000	\$50,000
Subtotal Preliminary Studies and Approvals					\$150,000
1	<i>Proposed Works</i>				
1.1	3 Pump 1L/s @42m and 1 Fire Pump 38L/s @42m	L.S.	1	\$500,000	\$500,000
1.2	Standby Power Unit (45kW)	L.S.	1	\$50,000	\$50,000
1.3	New 300mm watermain	m	1200	\$1,151	\$1,381,200
Subtotal Proposed Works					\$1,931,200
SUBTOTAL					\$2,081,200
<i>Contractor overhead and profit on Sub Total (10%)</i>					\$208,120
<i>Estimating Contingencies on Sub Total (30%)</i>					\$624,360
TOTAL					\$2,913,680
<i>Engineering Design and Construction Services on Total (15%)</i>					\$437,052
GRAND TOTAL					\$3,351,000

ATTACHMENT 6

Summary of Environmental Effects, Mitigation, & Commitments Table

Table 1: Summary of Environmental Effects, Mitigation and Commitments to Future Work

I.D. #	Issue/Concern Potential Effects	Mitigation/Protection/Monitoring
1.	<p>Aquatic / Fish & Fish Habitat</p> <ul style="list-style-type: none"> There are no watercourses on the site or in proximity and no potential to directly impact fish and fish habitat. 	<ul style="list-style-type: none"> During the construction period, sediment and erosion control measures should be installed to ensure that exposed soils are not susceptible to erosion following precipitation events and enter roadside drainage.
2.	<p>Vegetation/Vegetation Communities</p> <ul style="list-style-type: none"> The site is primarily manicured lawn with some mature trees on the perimeter. The area of expansion will not impact mature vegetation. 	<ul style="list-style-type: none"> All areas disturbed during construction should be restored as soon as possible following the completion of earthworks. Exposed surfaces should be re-stabilized and re-vegetated as soon as possible following construction.
4.	<p>Terrestrial Wildlife</p> <ul style="list-style-type: none"> Given the developed nature of surrounding lands and the minimal vegetation present on the subject site there is a low potential to impact area wildlife and their habitat. Construction will be temporary and the site will be restored post construction and continue to provide the same level of habitat. 	<p>The following mitigation measures will assist in minimizing impacts to area wildlife during the construction period:</p> <ul style="list-style-type: none"> To avoid impacts to breeding birds, the removal of vegetation (including clearing and grubbing) should be avoided between April 1st and August 30th. If works are required within this timing window, then the area should be cleared of nests by a qualified avian biologist prior to the activity being undertaken. The Contractor shall avoid destroying nests of migratory birds.
5.	<p>Surface Water / Erosion & Sediment Control</p> <ul style="list-style-type: none"> Construction may result in the release of sediment into roadside drainage (i.e. catch basins). Accidental spillage from machinery (fuel, lubricants etc.) may occur and enter roadside drainage. 	<p><u>Applicable OPSS</u></p> <ul style="list-style-type: none"> OPSS 805 – Construction Specification for Temporary Erosion and Sediment Control Measures OPSS 804 – Construction Specification for Seed and Cover OPSS 180 – General Specification for the Management of Excess Materials

I.D. #	Issue/Concern Potential Effects	Mitigation/Protection/Monitoring
6.	<p>Groundwater</p> <ul style="list-style-type: none"> The Town of Midland is located within the Severn Sound Source Protection Area and is subject to the South Georgian Bay Lake Simcoe Source Protection Plan. The site is the location of a municipal groundwater well that provides water servicing for a portion of the municipality. The site is within a Wellhead Protection Area and therefore mitigation will be required to minimize the potential for construction to impact groundwater (i.e. accidental spills). 	<ul style="list-style-type: none"> The conditions and policies of the South Georgian Bay Lake Simcoe Source Protection Plan will need to be reviewed and considered during detailed design and construction. Given that the site is within a Wellhead Protection Area, measures to mitigate potential impacts to groundwater will need to be applied in accordance with the South Georgian Bay Lake Simcoe Source Protection Plan. OPSS 180 – General Specification for the Management of Excess Materials. Measures will be required to minimize the potential for spills (i.e. fuel) during construction. Any groundwater dewatering necessary to permit construction of the facility may require a Permit to Take Water from the MECP.
7.	<p>Air Quality</p> <ul style="list-style-type: none"> Construction activities have the potential to generate dust and fumes which can negatively impact air quality. All impacts will be temporary and limited to the period of construction. 	<ul style="list-style-type: none"> The Contractor should utilize best management practices during construction to maintain air quality and include no unnecessary idling of vehicles during construction. Stockpiles of soil, sand and aggregate should be covered. Dust suppressants shall be applied to control dust generated by construction activities.
8.	<p>Land Use</p> <ul style="list-style-type: none"> Since construction will be confined to the existing municipal site there is a low potential to directly impact adjacent properties including property access or traffic flow. As part of the upgrades the existing structure will be expanded to include an additional area similar in size to the current building. Given the large size of the site and only a minor expansion proposed, aesthetic impacts will be minimal. 	<ul style="list-style-type: none"> Use of traffic management measures (i.e. construction staging, detours etc.) to minimize impacts to local traffic and to maintain access during construction. Provide advance notice to property owners regarding temporary construction.
9.	<p>Noise</p> <ul style="list-style-type: none"> The works proposed are taking place within a residential area resulting in an increased potential for noise impacts during construction. 	<ul style="list-style-type: none"> Construction should adhere to the municipal Noise By-Law 2009-104. The contractor should be restricted from working during the weekends or on holidays. Equipment should be maintained in an operating condition that prevents unnecessary noise, including but not limited to non-defective muffler systems, properly secured components, and the lubrication of moving parts. The idling of equipment should be restricted to the minimum necessary to perform the specified work.

I.D. #	Issue/Concern Potential Effects	Mitigation/Protection/Monitoring
10.	<p>Servicing/Utilities</p> <ul style="list-style-type: none"> Construction on-site has the potential to impact utility infrastructure. 	<ul style="list-style-type: none"> During detailed design additional review will be required to confirm the location of existing municipal infrastructure and utility services to ensure that service can be maintained during the construction period.
11.	<p>Contamination/Waste Management</p> <ul style="list-style-type: none"> There is the potential for excess materials to be generated during construction. 	<ul style="list-style-type: none"> Excess material will require proper management (removal, storage and disposal). Materials shall be managed in accordance with OPSS 180 – General Specification for the Management of Excess Materials.
12.	<p>Archaeological</p> <p>Since the site has not been previously assessed an archaeological assessment will be required.</p>	<ul style="list-style-type: none"> A Stage 1-2 archaeological assessment is recommended in advance of construction to clear the site of archaeological concerns.

