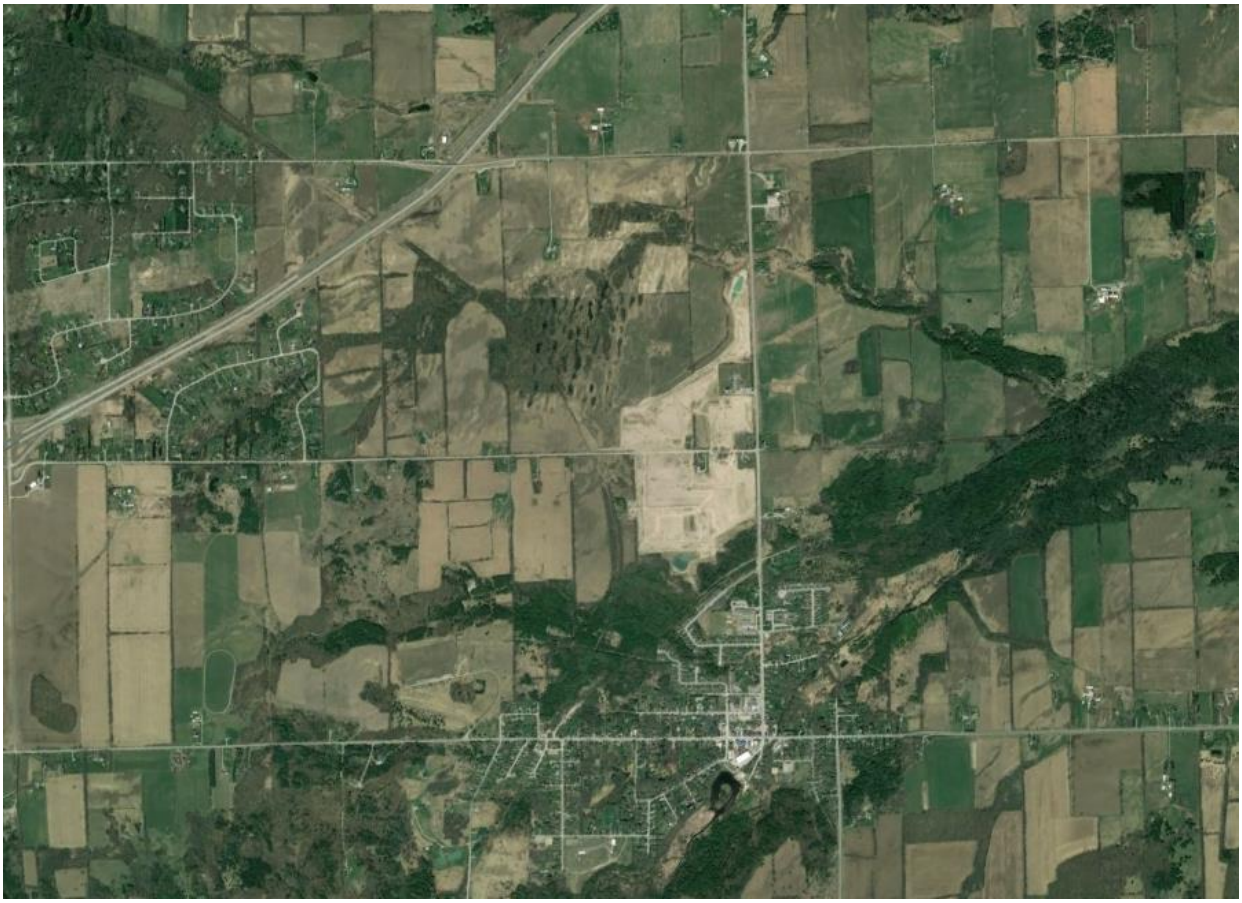


Township of Cavan Monaghan

Water and Wastewater Master Servicing Study

Class Environmental Assessment Report

March 1, 2024

Prepared for:

RVA

TOWNSHIP OF CAVAN MONAGHAN

Have it all. Right here.

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300
Toronto ON M2J 4Z8 Canada
T 416 497 8600 **F** 855 833 4022
rvanderson.com

RVA 205371

March 1, 2024

Township of Cavan Monaghan
988 County Road 10
Millbrook, ON
L0A 1G0

Attention: Wayne Hancock, P.Eng.

Dear Mr. Hancock,

Re: Township of Cavan Monaghan Water and Wastewater Master Servicing Study Report

We are pleased to provide the enclosed Report for the Township of Cavan Monaghan Water and Wastewater Master Servicing Study.

Please do not hesitate to contact the undersigned if you have any questions.

Yours very truly,

R.V. ANDERSON ASSOCIATES LIMITED

Dania Chehab, P.Eng.
Project Manager

Rika Law, P.Eng., PMP
Project Director

BEST MANAGED COMPANIES Platinum member

Township of Cavan Monaghan

Water and Wastewater Master Servicing Study

Class Environmental Assessment Report

Prepared for:

The Township of Cavan Monaghan

This document is protected by copyright and was prepared by R.V. Anderson Associates Limited for the account of the Township of Cavan Monaghan. It shall not be copied without permission. The material in it reflects our best judgment in light of the information available to R.V. Anderson Associates Limited at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. R.V. Anderson Associates Limited accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

RVA 205371

March 1, 2024

Township of Cavan Monaghan Water and Wastewater Master Servicing Study
Class Environmental Assessment Report

TABLE OF CONTENTS

EXECUTIVE SUMMARY **1**

1.0 INTRODUCTION **1**

1.1 Master Servicing Studies 5
1.2 Problem and Opportunity Statement 5

2.0 BACKGROUND INFORMATION **7**

2.1 Study Area 7
2.2 Existing Conditions 9
2.3 Background Studies 11

2.3.1 Growth Management Strategy 11
2.3.2 Technical Memorandum #1 – Population and Flow Forecasts 13

3.0 POPULATION AND EMPLOYMENT GROWTH **15**

3.1 Current Population and Employment 15
3.2 Forecasted Population and Employment 15

4.0 WASTEWATER SYSTEM **16**

4.1 Existing Wastewater Treatment and Collection System 16
4.2 Existing Flows 17
4.3 Future Wastewater Servicing Requirements 18

5.0 WATER SYSTEM **20**

5.1 Existing Water Supply and Storage System 20
5.2 Existing Demands 21
5.3 Future Water Servicing Requirements 22

6.0 EVALUATION CRITERIA **23**

6.1 Social 23
6.2 Financial 23
6.3 Technical 24
6.4 Cultural Heritage 24
6.5 Natural Environment 25

7.0 RELATED INVESTIGATIONS **26**

7.1 Stage 1 Desktop Archaeological Assessment....26
7.2 Desktop Cultural Heritage Report....26
7.3 Desktop Hydrogeological Study....27
7.4 Desktop Natural Heritage Investigation....28

8.0 WASTEWATER TREATMENT....29

8.1 Identification of Alternatives – Wastewater treatment....30

8.1.1 Alternative 1 – Do Nothing....31
8.1.2 Alternative 2 – Limit Growth....31
8.1.3 Alternative 3 – Reduce Inflow and Infiltration....31
8.1.4 Alternative 4 – Expand the Existing Wastewater Treatment Plant....31
8.1.5 Alternative 5 – Construct a Second Wastewater Treatment Plant....32
8.1.6 Alternative 6 – Convey Wastewater to Another System for Treatment....32
8.1.7 Alternative 7 – Construct New Decentralized Wastewater Systems....32

8.2 Pre-Screening Results....32

8.2.1 Alternative 4 – Expand the Existing Wastewater Treatment Plant....33
8.2.2 Alternative 5 – Construct a Second Wastewater Treatment Plant....33

8.3 Detailed Evaluation of Alternatives....34

9.0 WASTEWATER COLLECTION AND CONVEYANCE....36

9.1 Identification of Alternatives for North Catchment – Wastewater Collection....38

9.1.1 Alternative 1 – Do Nothing....39
9.1.2 Alternative 2 – Construct New SPS and Convey Flow to West Sewer Shed....39
9.1.3 Alternative 3 – Construct New SPS and Convey Flow to East Sewer Shed....40

9.2 Detailed Evaluation of Alternatives for North Catchment....41
9.3 Identification of Alternatives for South Catchment – Wastewater Collection....43

9.3.1 Alternative 1 – Do Nothing....44
9.3.2 Alternative 2 – Upgrade the Existing SPS....45

9.4 Detailed Evaluation of Alternatives for South Catchment....45

10.0 WATER SUPPLY....46

10.1 Identification of Alternatives – Water Supply....47

10.1.1 Alternative 1 – Do Nothing....48
10.1.2 Alternative 2 – Limit Growth....48
10.1.3 Alternative 3 – Reduce Water Demands by Water Conservation and Efficiency....48
10.1.4 Alternative 4 – Expand Existing Groundwater Well Supply....48
10.1.5 Alternative 5 – Build New Groundwater Wells at Different Location....49
10.1.6 Alternative 6 – Source from External Water Supply....49
10.1.7 Alternative 7 – Construct A New Surface Water Treatment Plant....50

10.2 Pre-Screening Results 50

10.2.1 Alternative 4 – Expand Existing Groundwater Well Supply 51
10.2.2 Alternative 5 – Find Additional Groundwater Well Supply 51

10.3 Detailed Evaluation of Alternatives....52

11.0 WATER STORAGE AND DISTRIBUTION 54

11.1 Identification of Alternatives – Water Storage and Water Distribution....55

11.1.1 Alternative 1 – Do Nothing....56
11.1.2 Alternative 2 – Limit Growth....57
11.1.3 Alternative 3 – Increase Water Conservation....57
11.1.4 Alternative 4 – Add Additional Water Storage Tank at New Location and Retain Existing Standpipe 57
11.1.5 Alternative 5 – Build New Water Reservoir at New Site and Decommission Existing Water Storage Tank....57

11.2 Pre-Screening....58

11.2.1 Alternative 4 – Add Additional Water Storage at New Location and Retain Existing Standpipe....58

11.3 Detailed Evaluation of Alternatives....59

12.0 PREFERRED SOLUTIONS....61

12.1 Preferred Wastewater Treatment Alternative 61
12.2 Preferred Wastewater Collection and Conveyance Alternative....62
12.3 Preferred Water Supply Alternative....63
12.4 Preferred Water Storage and Distribution Alternative....64

13.0 CONSULTATION AND ENGAGEMENT 66

13.1 Contact List of Interested and Affected Parties 66
13.2 Notice of Study Commencement....66
13.3 Public Information Centre (PIC) 66
13.4 Comments and Input Received....67
13.5 Engagement with Indigenous Communities 68
13.6 Notice of Completion....69

14.0 FUTURE STUDIES, PHASING, AND IMPLEMENTATION 70

14.1 Future Studies and Class EA Requirements 70
14.2 Schedule, Phasing, and Implementation Plan 73

15.0 REFERENCES....75

LIST OF TABLES

Table 2.1: Commercial Land Requirements

Table 2.2: Residential Land Requirements

Table 2.3: Urban Employment Area Land Requirements

Table 3.1: Millbrook Total Long-Term Population and Employee Estimates

Table 4.1: Existing Wastewater Treatment Plant Capacities

Table 4.2: Existing Sewage Pumping Station Capacities

Table 4.3: Existing Raw Sewage LS Peak Flows

Table 4.4: Existing Tupper St. SPS Peak Flows

Table 4.5: Existing WWTP Peak Flows

Table 4.6: Long-Term Raw Sewage Lift Station Peak Flows

Table 4.7: Long-Term Tupper St. SPS Peak Flows

Table 4.8: Long-Term WWTP Peak Flows

Table 5.1: Existing Well Pumping Station Capacity

Table 5.2: Existing Booster Pumping Station Capacities

Table 5.3: Water Storage Tank Capacity

Table 5.4: Existing Water Demands

Table 5.5: Existing Water Storage Tank Use/Capacity

Table 5.6: Long-Term Water Demands

Table 5.7: Long-Term Water Storage Tank Requirements

Table 8.1: Long List of Alternatives and Screening

Table 8.2: Legend for Evaluation Criteria

Table 8.3: Detailed Evaluation of Shortlisted Wastewater Treatment Alternatives

Table 9.1: Long List of Alternatives and Screening

Table 9.2: Long List of Alternatives and Screening

Table 10.1: Long List of Alternatives and Screening

Table 10.2: Legend for Evaluation Criteria

Table 10.3: Detailed Evaluation of Water Supply Alternatives

Table 11.1: Long List of Alternatives and Screening

Table 11.2: Legend for Evaluation Criteria

Table 11.3: Detailed Evaluation of Water Storage Alternatives

Table 14.1: Class EA Requirements for Preferred Solutions

Table 14.2: Summary of Projects and Phasing

LIST OF FIGURES

Figure 1.1: Municipal Class EA Process (Municipal Engineers Association, 2023)

Figure 2.1: Aerial Map of Millbrook Settlement Boundaries in Township of Cavan Monaghan

Figure 2.2: Aerial Map of Study Area with Existing Infrastructure

Figure 8.1: Forecasted Peak Wastewater Flow from 2021-2051

Figure 9.1: Aerial Map of North and South Catchment Areas

Figure 9.2: North Catchment Proposed Conveyance Route, West Side

Figure 9.3: North Catchment Proposed Conveyance Route, East Side

Figure 9.4: WWF Profile, North Catchment Alternative 2 - West Path

Figure 9.5: WWF Profile, North Catchment Alternative 3 - East Path

Figure 10.1: Forecasted Water Supply Maximum Day Demand

Figure 11.1: Forecasted Maximum Water Storage Requirement from 2021 to 2051

Figure 12.1: Aerial Map of Existing Wastewater Treatment Plant Boundary

Figure 12.2: Aerial Map of Existing Well Site

Figure 12.3: Aerial Map of Existing Water Storage Tank Location

APPENDICES

APPENDIX 1	Population, Water Demand, Wastewater Flow Projection Review
APPENDIX 1-1	Technical Memorandum #1: Population and Flows (TM1)
APPENDIX 1-2	Watson & Associates Economists Ltd. Growth Management Strategy Final Addendum Report, 2022
APPENDIX 2	Desktop Hydrogeological Study, Thurber Engineering Ltd., 2023
APPENDIX 3	Natural Heritage Maps
APPENDIX 3-1	Natural Heritage Map – Millbrook Area, Ministry of Natural Resources and Forestry (MNRF)
APPENDIX 3-2	Natural Heritage System Map, County of Peterborough

APPENDIX 4 Stage 1 Archaeological Assessment, ASI, 2023
APPENDIX 5 Cultural Heritage Report: Desktop Collection Results, ASI, 2021
APPENDIX 6 Communication Records & Consultation
APPENDIX 6-1 Contact Lists
APPENDIX 6-2 Notices of Project Commencement, PIC, and Completion
APPENDIX 6-3 PIC Materials
APPENDIX 6-4 Comments and Correspondence
APPENDIX 7 Wastewater Conveyance Modelling Results

EXECUTIVE SUMMARY

Project Overview

R.V. Anderson Associates Limited (RVA) was retained by the Township of Cavan Monaghan (Township) to complete a Master Servicing Study (MSS) through the Class Environmental Assessment process for its Township, particularly within the Millbrook Urban Area. The services included:

- Water Supply
- Water Storage and Distribution
- Wastewater Treatment
- Wastewater Collection and Conveyance

The MSS identified and evaluated alternatives as well as identified preferred solutions for the above services considering long-term growth. This MSS considered a 30-year planning horizon, from the years 2021 to 2051 as described/projected in the recently completed Growth Management Strategy (GMS) Final Addendum Report, dated August 29, 2022, and prepared by Watson and Associates Economists Ltd., (Watson, 2022)

Municipal Class Environmental Assessment

This MSS followed a Municipal Class Environmental Assessment (Class EA) process for master plans under Approach #1. This meant completing Phase 1 of the Class EA process, and a higher/broader level of investigations for Phase 2. The MSS provides long-range plans that identify infrastructure requirements for existing/future needs within a study area through the application of environmental assessment principles, namely public/agency consultation, and evaluation of alternatives based on key criteria.

The preferred solutions would:

- Comply with applicable regulations to provide:
    - Safe and reliable supply, storage, and distribution of drinking water.
    - Proper collection and treatment of wastewater.
    - Responses to stakeholder and Indigenous Community comments and concerns.
- Be financially viable.

- Be operationally and technically sustainable.
- Align with the Township's social, economic, and environmental objectives.

Water supply, water storage, wastewater and wastewater conveyance needs were forecasted based on a projected population from 2021 to 2051. Strategies for upgrading the municipal servicing infrastructure were proposed and evaluated in detail with stakeholder consultation. Public consultation included direct mail-outs to stakeholders, and newspaper notifications of the Notice of Commencement, Notice of Public Information Centre, and Notice of Completion. Correspondences received during the MSS are included in the appendices (**Appendix 6-4**) and comments received during the MSS process were considered and responses have been incorporated into this report.

In consultation with interested stakeholders (public and agencies) and interested and affected Indigenous Communities, various alternatives were considered and evaluated against criteria such as social, financial, technical, archaeological/cultural heritage and environmental. The alternatives were also evaluated with the preferred solution criteria described in the problem and opportunity statement, as shown in **Section 1.2**.

The preferred solutions were prioritized and are recommended to be implemented in phases to address immediate needs, intermediate goals, and the long-term vision of the Township. Implementation of the preferred solutions will be subject to the outcome of further Class EA studies, financial viability, and Council approvals.

Preferred Alternatives for Master Servicing

The municipal servicing infrastructure was evaluated, and different solutions were proposed.

Servicing – Water Supply

From the analysis of the existing Water Supply services in the Township it was found that the current Millbrook Municipal Well Field would not be able to adequately service the projected population past 2031.

From the evaluation, the preferred alternatives were Alternative 4 – Expand Existing Groundwater Well Supply and Alternative 5 – Find Additional Groundwater Well Supply. It is expected that these solutions could bring the water supply capacity from approximately 3,000 m^3/day to 6,214 m^3/day by 2051. Both alternatives propose expanding the water supply capacity in a staged fashion to meet future growth.

Alternative 4 requires the Township to conduct further hydrogeological investigations to determine groundwater quality and quantity. These investigations will also confirm if expanding the current groundwater supply will be possible and if the supply is enough to service the projected population.

Alternative 5 proposes that the Township investigate other potential well sites near or within the Millbrook Settlement Area and determine if any of them have adequate supply and water quality to supply the current and forecasted Millbrook needs. If an adequate additional well site(s) is/are found, this solution will require land acquisition, as well as potential environmental, social, cultural heritage and archaeological impacts. The Township has presently identified multiple potential well sites which could support this alternative.

To determine the viability of these alternatives the Township is recommended to complete a further Schedule B Class EA or an Archaeological Screening Process (ASP). These studies will include the previously mentioned investigations, confirmation of footprint requirements and development of preferred alternative.

Servicing – Water Storage

From the analysis of the existing water storage infrastructure in the Township it was found that the current water standpipe could not adequately service the projected population past 2027.

From the evaluation, the preferred solution was Alternative 4 – Add additional water storage at a new location. This alternative proposes that the Township find a new location for another water storage reservoir to increase the total storage capacity from 2,115 m^3 to 4,912 m^3 by 2051.

To implement this alternative, it is recommended that the township complete a further Schedule B Class EA to confirm the location, capacity, and storage type for the new storage solution. As part of the Class EA the Township will be required to complete additional environmental, archaeological, and cultural heritage studies on the to-be-determined location.

In addition, an increase in the capacity of the existing Millbrook Booster Pumping Station will be required imminently to service the development growth near the Standpipe area. The capacity increase can be accomplished through new equipment or replacement of equipment inside the BPS. As a result, this project is exempt from the Class EA process.

Servicing – Wastewater Treatment

From the analysis of the existing Millbrook Wastewater Treatment Plant (WWTP) it was determined that the current peak rated capacity of 8,242 m^3/day would not be adequate for the projected population past 2031.

From the evaluation, the preferred solution was Alternative 4 – Expand the existing wastewater treatment plant. This solution was determined to be appropriate since the Township owns a large parcel of land where the current WWTP stands and would allow the Township to optimize and maximize the usage of existing infrastructure. This alternative will ultimately bring the peak rated capacity to 13,972 m^3/day by 2051.

To implement this alternative, it is recommended that the Township complete a future Schedule C Class EA process to confirm technology, footprint requirements and viability. As part of the associated Class EA process the Township would be required to complete an assimilative capacity study (ACS) to confirm effluent discharge capacity. In addition to this, the Class EA process will require additional environmental, archaeological, cultural heritage and hydrogeological studies.

Servicing – Wastewater Collection and Conveyance

Preferred solutions for wastewater conveyance for the North and South Catchments of Millbrook were determined through a wastewater conveyance model developed in PC SWMM.

For the North Catchment, findings from the model determined that conveying wastewater via SPS to the WWTP through Alternative 3 - Construct New Sewage Pumping Station (SPS) and Convey Wastewater to East Sewer Shed would be preferred. This alternative was preferred since the route minimized surcharging which was found under Wet Weather Flows (WWF) in other alternatives. The model did however find some minor surcharging in the system in Alternative 3 which could be eliminated when sanitary sewers east of Century Blvd on Centennial Lane are upsized. Ultimately the alternative proposes following the east side path and upsizing the sanitary sewer in the section that showed surcharging in the model. Based on Class EA requirements this project would require a Schedule B Class EA or ASP to construct a new SPS and replace the sanitary sewer on Centennial Lane.

For the South Catchment, findings from the model determined that there was no surcharging in the system under DWF and WWF. The alternative chosen as the preferred solution was Alternative 2 – Upgrading the SPS for the South Catchment. In analysis it was determined that the existing Tupper St. SPS does not have enough pumping capacity to service current or future flows, and thus Alternative 2 proposes upgrading the SPS to meet future requirements. Since this alternative is being applied to an existing, operational SPS, no Class EA will be required to perform these upgrades.

Next Steps

As per the Municipal Class EA document, the recommended projects that are exempted from the EA process, or can complete an Archaeological Screening Process (ASP) to exempt them from the EA process can proceed to the design/construction phases after the 30-day review period at the publishing of this MSS. Should a recommended project not pass an ASP it will be subject to the requirements of a Schedule B Class EA.

The recommended projects which require a Schedule B Class EA will need to complete further investigations (as noted), Phase 2 (site specific) and the publishing of a Project File Report.

The recommended projects which require a Schedule C Class EA can proceed with additional studies, along with Phases 2, 3 and 4 of the Class EA process and the publishing of the Environmental Study Report (ESR).

These projects can proceed to design and construction unless any relevant, unresolved concerns related to Aboriginal or Treaty Rights are raised within the 30-day review period of the published report. Comments received during the 30-day review period will be reviewed and considered by the proponent of these projects.

1.0 Introduction

R.V. Anderson Associates Limited (RVA) was retained by the Township of Cavan-Monaghan (the Township) to complete a Master Servicing Study (MSS) for the Millbrook Urban Area. The MSS process included:

- Developing projections of future servicing needs for
    - Water supply
    - Water storage and distribution
    - Wastewater treatment
    - Wastewater collection and conveyance
- Developing feasible servicing alternatives to address the needs.
- Evaluating the alternatives against key criteria.
- Consulting with interested public, First Nation communities and agencies.
- Selecting a recommended alternative for each servicing need, considering phasing and cash flow.

The process used to undertake the MSS followed the Master Plan process as prescribed by the *Municipal Class Environmental Assessment process per Environmental Assessment Act, R.S.O. 1990* (as amended).

The Municipal Class Environmental Assessment (Class EA) is an approved planning procedure that proponents can follow to meet the requirements of the Ontario Environmental Assessment Act on municipal projects. The Class EA process is meant to deal with projects that are common, limited in scale, and have a predictable range of environmental effects which can be mitigated. The Class EA approach guides proponents to evaluate the environmental impacts of alternatives to a project and alternative methods of carrying out the project.

The Class EA approach includes mandatory consultation requirements for public, Indigenous, and regulatory agency engagement. The Class EA planning process has five phases, including public consultation and Indigenous Community engagement requirements, as follows:

- **Phase 1:** Definition of Problem or Opportunity (With Optional Public Consultation)

- **Phase 2:** Identification and Evaluation of Alternative Solutions, Mandatory Public Consultation
- **Phase 3:** Identification and Evaluation of Alternative Design Concepts for the Preferred Solution, Mandatory Public Consultation
- **Phase 4:** Completion of the Environmental Study Report, Mandatory Public Consultation
- **Phase 5:** Implementation of the Works (i.e., design and construction), Optional Public Consultation

The Class EA identifies two (2) different categories or "schedules" of projects:

- **Schedule B** projects have the potential for some adverse environmental effects and may be subjected to a screening process. This involves consulting with the First Nation communities, public and relevant government agencies to consider and address concerns. Schedule B projects must include Phases 1 and 2 of the Class EA process. If there are no outstanding concerns, then a Project File Report needs to be prepared, a notice of completion issued, and a 30-day review period provided.
- **Schedule C** projects have the potential for more significant environmental effects and must proceed according to the full planning and documentation procedures specified in the Class EA document. Phases 1 through 4 must be fulfilled, an Environmental Study Report (ESR) prepared, a notice of completion issued, and a 30-day review period provided.

Additionally, the Class EA identifies that certain projects may use an Archaeological Screening Process (ASP) to determine if that project can be exempt from the Class EA process.

- **Archaeological Screening Process (ASP)** consists of a series of questions which link to the tools and criteria set forth by the Ontario Heritage Act. Proponents are expected to conduct all the necessary research to respond to the questions. The answers will ultimately outline if the project site has archaeological value, what risks to that value may occur because of construction and how those risks may be mitigated. Should a project pass an ASP, indicating that there is little to no archaeological value or risks that may be adequately mitigated, then the ASP can exempt the project from the need of a Class EA. Certain projects resulting from this MSS, upon passing an ASP, may move forward to detailed design without the need for further Class EA studies.

This MSS will follow Approach #1 under the Master Planning Framework of the Municipal Class EA Process. This approach will provide a high-level study of existing infrastructure as well as identification of the future needs of the Township. This will ultimately lead to the development of alternative solutions for municipal water/wastewater services in the Millbrook Urban Area which align with the Township's previously completed Growth Management Strategy (GMS) prepared by Watson and Associates Economists Ltd.

This MSS has complied with Phase 1 and (high level) Phase 2 of the Class EA process. Recommended projects that result from the MSS that fall within a Schedule A or A+ category can proceed with design and construction upon the completion of this Class EA. Recommended projects that result from the MSS that fall within a Schedule B category must first complete Phase 2 of the Class EA process and publish a Project File Report. After the 30-day public review period, the project can proceed to detailed design/implementation. Projects that fall under a Schedule C category will first need to undergo Phases 2, 3 and 4 of the Class EA process, publication of an ESR and 30-day public review period prior to design and construction, (Municipal Engineers Association, 2023).

Figure 1.1 shows the Municipal Class EA process in full (Municipal Engineers Association, 2023).

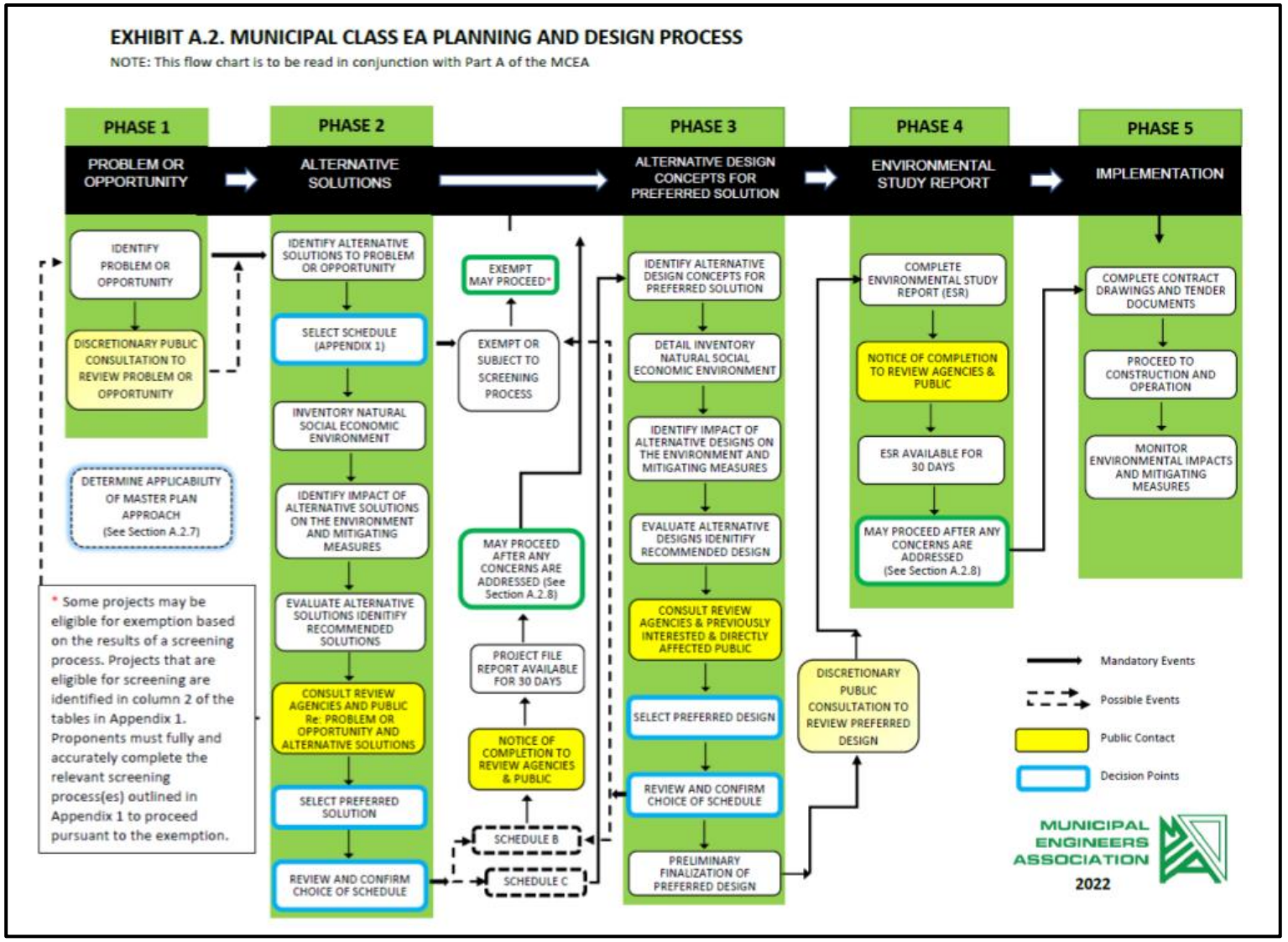


Figure 1.1: Municipal Class EA Process (Municipal Engineers Association, 2023)

1.1 Master Servicing Studies

Master Servicing Studies (MSS) are long-range plans that identify infrastructure requirements to accommodate existing and future populations within a study area through the application of environmental assessment principles. They take a system-wide approach to planning and result in a list of individual projects which can be implemented, each with their own requirements for further Class EAs (as required).

Depending on the scope and level of analysis in the MSS, the full requirements of Phase 1 and 2 of the Class EA may be satisfied at the project specific level for various projects. Alternatively, the Class EA Phases 1 and 2 may have to be revisited for an individual project prior to that project moving to design and construction. Recommended projects which are eligible for an ASP may be exempted from the Class EA process if they pass. Exempted projects may move forward to the design and construction phases.

Projects that would be considered Schedule C projects would require fulfillment of Phases 3 and 4 of the Class EA process, culminating in an Environmental Study Report (ESR) which would be published for public review prior to implementation.

All projects following the Class EA process can proceed to design and construction unless any relevant, unresolved concerns related to Aboriginal or Treaty Rights are raised within the 30-day review period of the published report. Comments received during the 30-day review period will be reviewed and considered by the proponent of these projects.

The recommendations of this report include a listing of any additional Class EA requirements before recommended projects can move to design and construction.

While MSS's are valid for 10 years, it is recommended that this MSS be reviewed at least every five years to determine the need for a formal review and/or updating. Potential changes that may trigger the need for a detailed review include major changes to original assumptions; major changes to components of the MSS; significant new environmental effects; and major changes in proposed timing of projects within the MSS, (Municipal Engineers Association, 2023).

1.2 Problem and Opportunity Statement

The Problem and Opportunity Statement describes the objectives of the study and the desired factors in the preferred alternative. This is a useful tool to pre-screen the long list of alternatives so that only feasible and likely alternatives can be evaluated in more detail based on criteria.

The problem and opportunity statement for the Township of Cavan Monaghan Master Servicing Study is as follows:

With the recent connection of Hwy 407 to Hwy 115, there is opportunity for Township improvements and growth in terms of employment, community services and residential living. As such, the Township of Cavan Monaghan is undertaking a Water and Wastewater Master Servicing Plan to develop a plan to identify key improvements to the existing water and wastewater infrastructure to service the current and future needs of the Township.

The focus of the study will be the Millbrook Urban Settlement Area, including future development within the existing urban area (in accordance with the Township of Cavan Monaghan Official Plan and Growth Management Strategy), while accommodating the future vision of servicing beyond the settlement boundary.

While the proposed development poses significant challenges to the Township, Cavan Monaghan is committed to providing efficient and sustainable infrastructure while ensuring that any development within the community preserves or enhances the environment for the betterment of future generations.

Preferred solution(s) will be prioritized and implemented in phases to address immediate needs, intermediate goals, and long-term growth, and shall generally:

- Comply with applicable regulations to provide adequate water and wastewater servicing.
- Comply with the Official Plan and Growth Management Strategy while accommodating future vision of servicing beyond the settlement boundary.
- Consider stakeholder comments and concerns.
- Consider Indigenous Community input and interests.
- Be financially viable.
- Be technically feasible and operationally sustainable.
- Be socially and environmentally responsible.

2.0 Background Information

2.1 Study Area

The Township completed a Growth Management Strategy (GMS) identifying the population growth in the Millbrook Urban Settlement Area up to 2051, a 30-year period. Considering the future growth's needs, the GMS also provided a Future Settlement Area Boundary which will act as the Study Area Boundary for this MSS.

As documented in the GMS, the Millbrook Urban Settlement Area will represent approximately 94% of the Township's household growth within the 30-year period of 2021 to 2051. The study area is composed of various land uses including, but not limited to; residential, employment, commercial, institutional, parks and open space. Ultimately, most of the land planned for development in Millbrook has been designated as residential land and some for industrial/commercial. The study area additionally contains a "Special Development Area" where the former Millbrook Correctional Facility was located, (Watson, 2022)

Figure 2.1 is an aerial map showing the Future Settlement Area Boundary as defined by the GMS (the study area for this MSS), the Millbrook Urban Settlement Area and the Millbrook Built-Up Area (BUA) as defined by the GMS.

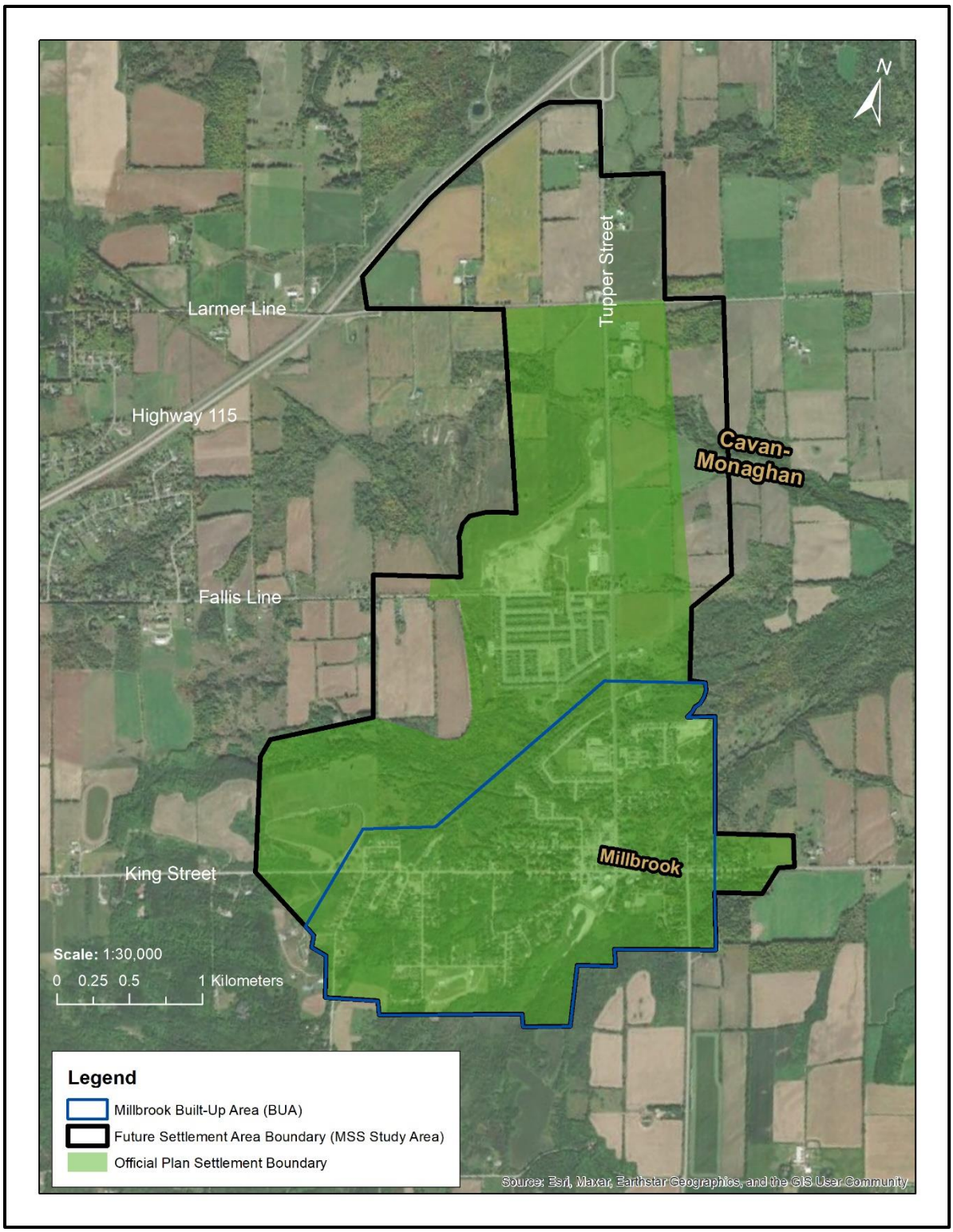


Figure 2.1: Aerial Map of Millbrook Settlement Boundaries in Township of Cavan Monaghan

2.2 Existing Conditions

The Township of Cavan Monaghan currently contains the following major water/wastewater infrastructure:

- Water Distribution Network
- Water Booster Pumping Station (BPS)
- Water Storage Tank (WST)
- Water Supply Wells
- Sanitary sewers network
- Sewage Pumping Station (SPS)
- Wastewater Treatment Plant (WWTP)

Figure 2.2 below displays the approximate locations of the major water/wastewater facilities.

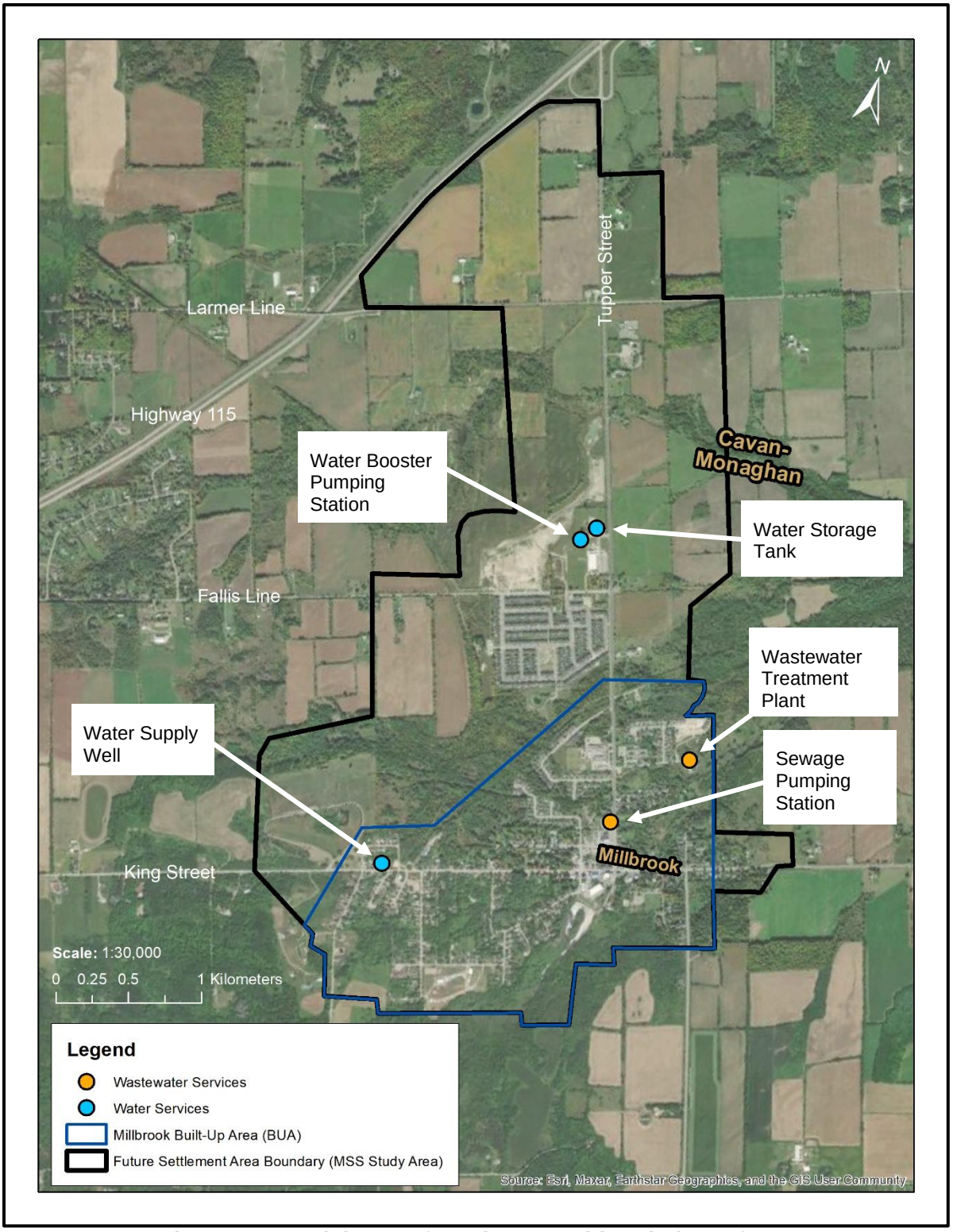


Figure 2.2: Aerial Map of Study Area with Existing Infrastructure

2.3 Background Studies

The following documents were reviewed in the development of this MSS:

- Amended Environmental Compliance Approval (Government of Ontario, Ministry of the Environment and Climate Change, 2017)
- Amended Permit to Take Water (Government of Ontario, Ministry of the Environment and Climate Change, 2018)
- Cultural Heritage Report: Desktop Collection Results (ASI, 2021)
- Growth Management Strategy Final Addendum Report (Watson & Associates, 2022)
- Official Plan (Township of Cavan Monaghan, Consolidated Version with Amendments 2021)
- Stage 1 Archaeological Assessment Cavan-Monaghan Water and Wastewater Master Servicing Study (ASI, 2021)
- Technical Memorandum, Desktop Hydrogeological Study, Water and Wastewater Servicing Study (Thurber Engineering Ltd., 2021)

The hydrogeological, archaeological, and cultural heritage studies are referenced and summarized further in **Section 7.0** and featured in their entirety in **Appendix 2**, **Appendix 4**, and **Appendix 5** respectively.

2.3.1 Growth Management Strategy

The Growth Management Strategy (GMS) prepared by Watson & Associates Economists Ltd. (Watson) was completed in August of 2022 and provided a long-term outlook for population, housing, and employment requirements as well as the corresponding urban land requirements. This study was conducted to provide considerations from 2021 to 2051 consistent with provincial plans and the County of Peterborough Municipal Comprehensive Review (MCR) of 2022.

The following is the approximated supply of developable lands per different land types in the Township and general comments made by the GMS.

The Millbrook Urban Settlement Area consists of 9,200 square metres (99,000 square feet) of occupied commercial space. The GMS found that demand for commercial lands exceeds supply of vacant commercial lands within the Millbrook Urban Settlement Area. Ultimately, to address the forecasted commercial land shortfall, approximately 6 net hectares (15 net

acres) of commercial land will be needed. **Table 2.1** shows the current supply and additional commercial lands required as per the GMS.

Table 2.1: Commercial Land Requirements

Commercial Land	
Current Supply of Developable Vacant Lands (Approximate)	**Additional Lands Required (Approximate)**
7 net ha (17 net acres)	6 net ha (15 net acres)

Based on the GMS, 94% of the Township's growth has been allocated to the Millbrook Urban Settlement Area and Future Settlement Area Boundary, where much of the growth is expected to be residential, with some commercial. The GMS recommended the use of mixed-use developments in the Designated Greenfield Area (DGA). Additionally, the GMS recommended that the Township focus on a 15% intensification rate of residential growth within the studied 30-year time period by promoting higher population density in the existing Millbrook Urban Settlement Area. **Table 2.2** below shows the current supply and additional residential lands required as per the GMS.

Table 2.2: Residential Land Requirements

Residential Land	
Current Supply of Developable Vacant Lands (Approximate)	**Additional Lands Required (Approximate)**
1,640 units in development approvals	75 ha (185 acres)

The GMS found that, for Urban Employment Area lands, 40 gross hectares (99 gross acres) of 45 developable hectares (111 acres) were vacant as of May 2022. Additionally, the GMS found that the Township is forecasted to accommodate 1,600 employees over the 2021-2051 period. The distribution of these employees is about 1,600 employees or 38% in dedicated employment areas, about 1,900 employees or 45% in dedicated community areas and about 700 employees or 17% in rural areas. **Table 2.3** shows the supply and additional lands required in the urban employment area as per the GMS.

Table 2.3: Urban Employment Area Land Requirements

Urban Employment Area	
Current Supply of Developable Vacant Lands (Approximate)	**Additional Lands Required (Approximate)**
45 ha (111 acres)	34 ha (84 acres)

(Watson & Associates Economists Limited, 2022)

2.3.2 Technical Memorandum #1 – Population and Flow Forecasts

RVA produced Technical Memorandum #1 (TM1) in December of 2022. The memorandum focused on the population and flows in the Millbrook Urban Settlement Area both currently and in the future. Most notably, TM1 acknowledged that most upcoming development of all land use types (commercial, residential, institutional, employment, etc.) within the Township will be within the current and future Millbrook Urban Settlement Area. This TM1 is consistent with the GMS prepared by Watson.

In addition to the above, TM1 provides some additional information about the Township. Some key points are as follows:

- The population of the Township of Cavan Monaghan was reported in the 2021 census as 10,016 (excluding census undercount) and is projected by the GMS to reach 17,570 in 2051.
- The total residential population in the Millbrook Urban Settlement Area is 2,558 in 2021 and projected to reach 10,455 in 2051.
- The total number of employees in the Millbrook Urban Settlement Area is 970 in 2021 and projected to reach 3,983 in 2051.

TM1 provided the basis for other sections in this MSS, as follows:

- Long-term population and flows are summarized in **Section 3.0**.
- Baseline wastewater flows, including projected flows and requirements for the future system are summarized in **Section 4.0**
- Baseline water system capacity and projected capacity for the future system. This information is summarized in **Section 5.0**.

For further information on long-term population, baseline wastewater flows and water system capacity, TM1 is included in its entirety in **Appendix 1-1**.

3.0 Population and Employment Growth

3.1 Current Population and Employment

As per TM1, the 2021 Millbrook population base was estimated to be 2,558 persons with 880 private dwellings (2.81 persons per dwelling) and 970 employees. The GMS utilized a baseline year of 2021 for growth projections. Consequently, as a basis for estimating water and wastewater flowrates RVA utilized the 2021 population information.

3.2 Forecasted Population and Employment

As per TM1, the net residential growth in Millbrook is estimated to be 7,897 over the years 2021 to 2051. Thus, adding the net residential growth to the 2021 population base provides a total residential population of 10,455 in 2051. These numbers were determined by utilizing the residential growth allocation for the Millbrook Designated Greenfield Area (7,515 persons), adjusting to be in line with the census undercount (multiplied by a factor of 1.0248) and adding it to the Millbrook Built-Up Area allocation (191 persons).

Additionally, employment growth is estimated to be 3,013 employees over the years 2021 to 2051. Thus, adding the employment growth to the 2021 employee base provides a total employment amount of 3,983 employees in 2051.

Table 3.1 below presents the total long-term population and employee estimates as described in TM1.

Table 3.1: Millbrook Total Long-Term Population and Employee Estimates

Year	Total Residential Population	Total Amount of Employees
2021	2,558	970
2051	10,455	3,983

For further discussion on these calculations, refer to the complete TM1 in **Appendix 1-1** and the complete GMS in **Appendix 1-2**.

4.0 Wastewater System

This section briefly illustrates existing conditions and future needs of the wastewater system.

4.1 Existing Wastewater Treatment and Collection System

Millbrook is currently serviced by two (2) Sewage Pumping Stations. They are as follows:

- Tupper Street Sewage Pumping Station (Tupper St. SPS)
- Raw Sewage Lift Station (LS) (within the WWTP)

The Millbrook WWTP, located on Centennial Lane, treats wastewater generated in the serviced Millbrook Urban Settlement Area (Official Plan Settlement Boundary). Presently, the original Millbrook village and downtown core are serviced by a municipal sanitary sewer system (South Catchment Area). Flows from this catchment are conveyed by gravity to the Tupper Street Sewage Pumping Station (SPS). The Tupper Street SPS then pumps sewage directly to the WWTP's Headworks Facility.

North of Centennial Lane, a separate sanitary sewer system (North Catchment Area) conveys flows by gravity to the WWTP's Raw Sewage Lift Station (Raw Sewage LS). Flows entering the Raw Sewage LS are pumped to the WWTP's Headworks Facility.

In the WWTP's Headworks Facility, incoming flows from the Tupper Street SPS and Raw Sewage LS are combined.

Information regarding the SPSs and WWTP are included in TM1 and the Amended Environmental Compliance Approval Number 5435-AKQL73 dated April 6, 2017.

Table 4.1 and **Table 4.2** below summarize capacity information of the existing WWTP and SPSs.

Table 4.1: Existing Wastewater Treatment Plant Capacities

Parameter	WWTP Rated Capacity (m^3/day)
Average Daily Flow	2,521
Peak Flow	8,242

Table 4.2: Existing Sewage Pumping Station Capacities

Sewage Pumping Station	# of Pumps	Rated Capacity (m^3/day)
Tupper St. SPS	3 (2 duty, 1 standby)	3,053
Raw Sewage Lift Station at WWTP	4 (2 duty, 2 standby)	5,196

4.2 Existing Flows

Existing flows to the Raw Sewage LS at the WWTP were estimated utilizing available flow monitoring data provided by the Township. The Peak Flow to the LS was estimated based on the inflow and infiltration allowance figures provided in the Cavan Monaghan municipal servicing standards design guidelines, (Township of Cavan Monaghan, 2018).

Existing flows to the Raw Sewage LS are summarized in **Table 4.3**.

Table 4.3: Existing Raw Sewage LS Peak Flows

Parameter	Peak Flow (m^3/day)
Existing Wastewater Flow	1,055
Rated Capacity	5,196
% of Rated Capacity	20%

Flows to the Tupper St. SPS were estimated utilizing available Supervisory Control and Data Acquisition (SCADA) data for the SPS provided by the Township. Existing flows to the Tupper St. SPS are summarized in **Table 4.4**.

Table 4.4: Existing Tupper St. SPS Peak Flows

Parameter	Peak Flow (m^3/day)
Existing Wastewater Flow	3,855
Rated Capacity	3,053
% of Rated Capacity	126%

Based on **Table 4.4**, the existing peak flow to the Tupper St. SPS is larger than the rated capacity.

The existing peak flow to the Millbrook WWTP was estimated as the sum of the peak flow from Raw Sewage LS and the Tupper St. SPS. Existing flows are summarized in **Table 4.5**.

Table 4.5: Existing WWTP Peak Flows

Parameter	Peak Flow (m^3/day)
Existing Wastewater Flow	4,910
Rated Capacity	8,242
% of Rated Capacity	60%

4.3 Future Wastewater Servicing Requirements

The forecasted peak flow from the North Catchment Area leading to the Raw Sewage LS at the WWTP was estimated from residential and employment growth calculations. The forecasted long-term (2051) flows to the Raw Sewage LS are summarized in **Table 4.6**.

Table 4.6: Long-Term Raw Sewage Lift Station Peak Flows

Parameter	Peak Flow (m^3/day)
Forecasted Wastewater Flow	9,652
Existing Rated Capacity	5,196
% of Rated Capacity	186%

The contents of **Table 4.6** show that the existing rated capacity will not be sufficient to accommodate the forecasted wastewater flow to 2051. As result, additional wastewater pumping capacity will be required.

A wastewater model for the future Millbrook Urban Settlement Area was prepared in the PCSWMM software program. Based on the wastewater model, the forecasted peak flow from the South Catchment Area leading to Tupper St. SPS was estimated. The forecasted long-term (2051) flows to the Tupper St. SPS are summarized in **Table 4.7**.

Results from the wastewater model used to make these estimations can be found in **Appendix 7**.

Table 4.7: Long-Term Tupper St. SPS Peak Flows

Parameter	Peak Flow (m^3/day)
Forecasted Wastewater Flow	4,320 (50 L/s)
Existing Rated Capacity	3,053
% of Rated Capacity	142%

The forecasted peak flow to the Millbrook WWTP was estimated as the sum of the peak flow from Raw Sewage LS and the Tupper St. SPS. Forecasted long-term (2051) flows to the WWTP are summarized in **Table 4.8**.

Table 4.8: Long-Term WWTP Peak Flows

Parameter	Peak Flow (m^3/day)
Forecasted Wastewater Flow	13,972
Existing Rated Capacity	8,242
% of Rated Capacity	170%

5.0 Water System

This section summarizes the existing conditions and future needs of the water supply, storage, and distribution system.

5.1 Existing Water Supply and Storage System

Millbrook is serviced with drinking water from the existing municipal well site. The municipal well site contains three (3) groundwater wells, with each pump rated for a capacity of 1,500 L/min at 64m Total Dynamic Head (TDH). The groundwater well supply facility operates under a Permit to Take Water (PTTW) which limits the total amount of water removal from all wells to 3,000 m^3/day.

Other major facilities include the Booster Pumping Station (BPS) and Water Storage Tank (WST). The BPS contains booster pumps and high flow pumps that provides water to the houses near the WST (where pressure from only the WST would be insufficient). The high flow pumps are only used for fire fighting purposes. The WST, located by the Township Municipal Office, consists of a 2,600 m^3 water storage standpipe, however due to minimum pressure requirements of the municipal system only 2,115 m^3 is considered usable storage. There is a water storage standpipe on King Street East, just east of the Millbrook Urban Settlement Boundary. However, that standpipe was taken out of service (due to age and hydraulic incompatibility) once the current water storage standpipe was operational.

Information regarding water infrastructure is included in TM1 and the Amended Permit to Take Water Number 7704-AW7HJF dated February 23, 2018.

Table 5.1, **Table 5.2** and **Table 5.3** below summarize capacity information of the existing well pumping station, booster pumping station and Water Storage Tank.

Table 5.1: Existing Well Pumping Station Capacity

Parameter	Well Site (m^3/day)
Maximum Daily Flow	3,000

Table 5.2: Existing Booster Pumping Station Capacities

Pump Type	# of Pumps	Rated Capacity
Booster Pumps	3 (2 duty, 1 standby)	22 L/s (1,901 m^3/day)
High Flow Pumps	2 (1 duty, 1 standby)	120 L/s (10,368 m^3/day)

Table 5.3: Water Storage Tank Capacity

Parameter	Standpipe (m^3)
Usable Storage	2,115

5.2 Existing Demands

As per TM1, existing water demands for the well pumping station are summarized in **Table 5.4**.

Table 5.4: Existing Water Demands

Parameter	Maximum Daily Flow (m^3/day)
Existing Water Demand	1,046
Rated Capacity	3,000
% of Rated Capacity	35%

As per TM1, existing storage use and capacity for the water storage tank are summarized in **Table 5.5**.

Table 5.5: Existing Water Storage Tank Use/Capacity

Parameter	Total Storage (m^3)
Existing Storage Demand	1,182
Rated Capacity	2,115
% of Rated Capacity	56%

5.3 Future Water Servicing Requirements

As per TM1, forecasted long-term (2051) water demands are summarized in **Table 5.6**.

Table 5.6: Long-Term Water Demands

Parameter	Maximum Daily Flow (m^3/day)
Forecasted Water Demand	6,214
Existing Rated Capacity	3,000
% of Rated Capacity	207%

Based on **Table 5.6**, the existing Millbrook municipal well capacity will be insufficient to accommodate the forecasted water demand. Therefore, additional water quantity is required.

As per TM1, forecasted long-term (2051) storage demands for the water storage tank are summarized in **Table 5.7**.

Table 5.7: Long-Term Water Storage Tank Requirements

Parameter	Total Storage (m^3)
Forecasted Storage Demand	4,912
Existing Rated Capacity	2,115
% of Rated Capacity	232%

Based on **Table 5.7**, the existing Millbrook water storage tank will not have sufficient volume to accommodate the forecasted water storage needs. Therefore, additional water storage volume is required.

Selection of preferred future water storage tank details (i.e., location, size, storage type, hydraulic grade line, etc.) and a water model for Millbrook will be prepared in the future Schedule B Class EA. Based on recommended water storage design details, required upgrades to watermains and the booster pumping station will be determined.

6.0 Evaluation Criteria

The evaluation process for the proposed alternatives followed a two-step approach. First, a list of alternatives was proposed where each alternative option was described in general terms and compared against the problem and opportunity statement. An alternative was not evaluated further if it would not comply with the problem and opportunity statement, had any major constraints, disadvantages, or overall unfeasibility (pre-screening). Following the evaluation of each alternative, a shortlist of possible alternatives was made. The shortlisted alternatives were evaluated further using typical Class EA evaluation criteria as described in the following sections.

6.1 Social

Social criteria represent the effect an alternative will have on the local human environment. Overall, the preferred alternative should have a positive effect on the functioning of the community without imposing excessive economic burden or altering the community's sociocultural fabric. Some factors considered under this criterion include:

- Ability to allow for future growth forecast under Township of Cavan Monaghan's Official Plan and Watson's GMS.
- Sensory impacts (including noise, dust, etc. during and after construction).
- Effects on neighboring properties.
- Effects on the municipality, local businesses, etc.
- Effects on First Nations and Indigenous communities.

6.2 Financial

Financial factors quantify the cost of the proposed alternative to the Township over its service life. This includes construction, operation, and maintenance costs of the proposed alternative. All the alternative solutions including 'Do Nothing' will have some cost associated with them as result of operation and maintenance. Despite this, the intention of this type of financial evaluation is to determine whether the costs outweigh the benefits of each alternative. Affordability and sustainability in terms of long-term costs for operation and maintenance are an important consideration. Funding opportunities, financing partnerships, implementation phasing and cash flow can be considered to assist with affordability. Some factors considered under this criterion include:

- Approximate life cycle costs (capital cost, operation & maintenance cost).
- Sustainability and affordability.
- Financial risks.

6.3 Technical

The technical criteria reflect the engineering considerations that relate to the design, functionality, and feasibility of the proposed alternative. These criteria are meant to evaluate how well the alternative achieves the project goal in terms of:

- Compatibility with existing systems.
- Ease of implementation and constructability.
- Effects on operations and maintenance.
- Technical Complexity.
- Complies with regulatory/approval requirements.
- Sensory impacts such as noise, dust, etc.

6.4 Cultural Heritage

Cultural Heritage criteria represent the effect an alternative will have on known and potential archaeological resources, built heritage resources and cultural heritage landscapes. Ideally, the preferred alternative would have no negative impact on cultural heritage resources. However, if a preferred site had archaeological potential or cultural heritage value/interest, efforts to minimize and mitigate the impact and to conserve the archaeological and cultural heritage resources would be put into place. Some factors considered under this criterion include:

- Effects on archeological sites or structures.
- Effects on known or potential built heritage resources and cultural heritage landscapes

Background Archaeological and Cultural Heritage reports can be found in **Appendix 4** and **Appendix 5** respectively, as prepared by Archaeological Services Inc. (ASI). They are summarised in **Section 7.1**.

6.5 Natural Environment

Environmental criteria evaluate the degree to which the alternative impacts the natural environment. This criterion puts emphasis on sensitive areas that are most critical to human or ecological functions and are most likely to be disturbed. The preferred solution would ideally have the least amount of ecological impact, but mitigation measures can be used to minimize negative impacts (if any). Some factors considered under this criterion include:

- Effects on wildlife and vegetation, habitat
- Effects on water, soil, and air quality
- Climate Change

A desktop hydrogeological study was conducted by Thurber Engineering Ltd. and can be found in **Appendix 2**.

Natural heritage maps obtained from the Ministry of Natural Resources website and County of Peterborough are available in **Appendix 3**.

7.0 Related Investigations

7.1 Stage 1 Desktop Archaeological Assessment

Archaeological Services Inc. (ASI) completed a Stage 1 Archaeological Assessment as a part of this MSS. This report has been included in **Appendix 4.** The report includes discussion regarding the following topics:

- Project context
- Historical context
- Archaeological context
- Analysis of archaeological potential
- Recommendations

The report notes that areas in the Millbrook Urban Settlement Area exhibit archaeological potential. For certain locations, additional Stage 2 archaeological assessments are required as early as possible during project specific EA work and prior to any ground disturbing activities, (Archaeological Services Inc. (ASI), 2021). The findings in this report would help subsequent project specific Class EAs to narrow down the need for further archaeological assessments.

7.2 Desktop Cultural Heritage Report

Archaeological Services Inc. (ASI) completed Cultural Heritage Report as a part of this MSS. This report has been included in **Appendix 5.** The report includes discussion regarding the following topics:

- Methodology (regulatory requirements, policies, background information review, etc.)
- Summary of historical development within the study area
- Existing conditions
- Community data collection
- Results and future work

The report notes that areas in the Millbrook Urban Settlement Area contain cultural heritage landscapes. Once potential water and wastewater servicing alternatives are further

progressed, additional cultural heritage reports may need to be prepared to assess potential impacts, (Archaeological Services Inc. (ASI), 2021). Cultural Heritage features that could be impacted by preferred solutions identified in **Section 12.0** would require further research and potential field review to confirm known resources and identify potential resources as well as produce a preliminary impact assessment. These steps will be limited to the study areas of each project-specific EA study resulting from the MSS report.

7.3 Desktop Hydrogeological Study

Thurber Engineering Ltd. (Thurber) completed a Desktop Hydrogeological Study as a part of this MSS. This report has been included in its entirety as **Appendix 2**. The report includes discussion regarding the following topics:

- Review of available information including:
    - Physiographic, geologic, and hydrogeological settings.
    - Previous investigations and reports.
    - Well records and existing permits.
    - Environmental setting.
- Assessment of:
    - Water supply
    - Construction dewatering
    - Future hydrogeological considerations

The report notes that there is a potential to increase water taking from the existing Millbrook well site. Previous reports indicate that a potential water taking rate of 5,374 m^3/day may be possible. The report also provides considerations regarding future studies related to the existing Millbrook well site and possible new well sites, (Thurber Engineering Limited, 2023). These will need to be undertaken as part of future project specific Class EA for additional water supply prior to detailed design and construction.

- Woodlands
- Oak Ridges Moraine (to the west side of Millbrook)

Further natural environment investigations, including field assessments, will need to be undertaken in future project specific Class EAs to help determine and evaluate the impacts on the natural environment in specific locations that will be considered.

8.0 Wastewater Treatment

The current peak flow rated capacity of the Millbrook Wastewater Treatment Plant (WWTP) is 8,242 m^3/day. It is recommended that the Township aims to operate the WWTP within 85% of the rated capacity. This will allow for contingency and emergency situations and avoid service disruption(s). If the Township were to "do nothing" in terms of increasing the WWTP's capacity, the Millbrook WWTP would reach 85% of the rated capacity by approximately 2029. Additional wastewater treatment capacity will be required to service growth past 2031, and by 2051 an additional peak capacity of 13,972 m^3/day would be required. This means that based on the future growth estimates it is recommended that the Township begin planning for future wastewater treatment infrastructure immediately to complete the Class EA, design, and construction before the WWTP uses 85% of its capacity in 2029. **Figure 8.1** shows the forecasted peak flows to the WWTP.

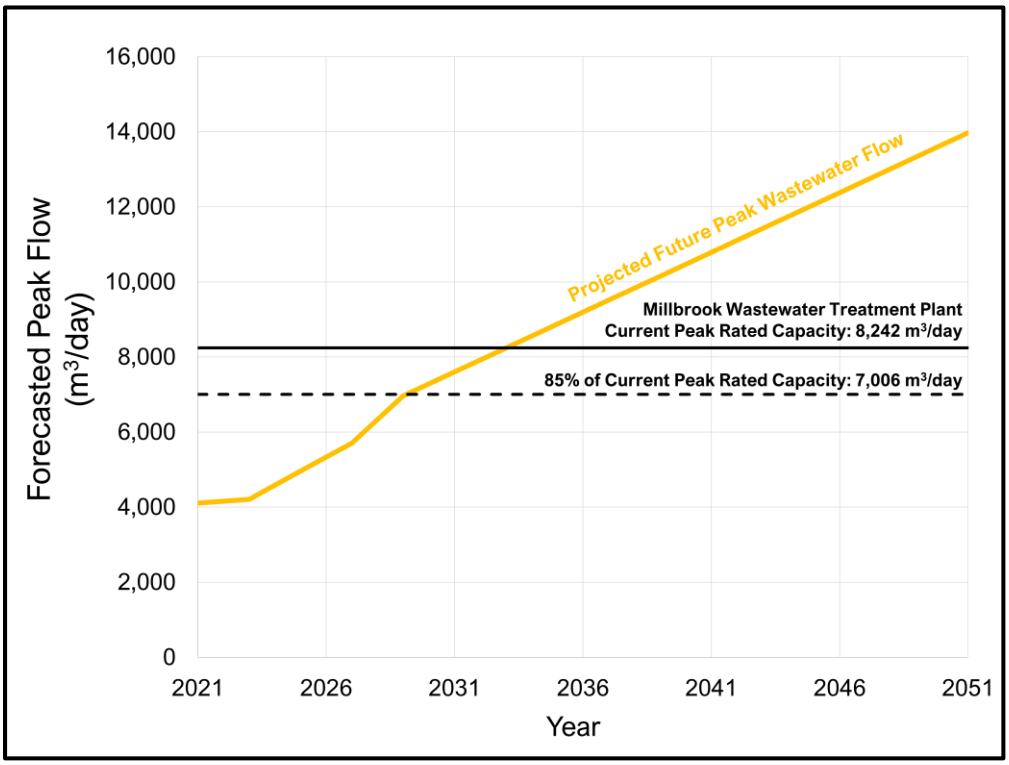


Figure 8.1: Forecasted Peak Wastewater Flow from 2021-2051

This section proposes a series of alternatives which are pre-screened and then evaluated in more detail to determine the preferred solution to address wastewater treatment requirements.

8.1 Identification of Alternatives – Wastewater treatment

This section describes alternatives that were identified to respond to the forecasted treatment capacity shortfall in the wastewater system. The viable alternatives were shortlisted and evaluated further. **Table 8.1** details a summary of the assessment criteria and results for each alternative.

Table 8.1: Long List of Alternatives and Screening

Alternatives	Does the alternative address the problem and opportunity statement?	Is the alternative technically and economically feasible?	Can the alternative be implemented without significant impacts?	Carry forward for detailed evaluation? (Yes/No)
1. Do Nothing	✗	✗	✗	**No**
2. Limit Growth	✗	✓	✗	**No**
3. Reduce Inflow and Infiltration (I&I)	✗	✓	✓	**Combine with preferred**
4. Expand Existing Wastewater Treatment Plant	✓	✓	✓	**Yes**
5. Construct A Second Wastewater Treatment Plant	✓	**Further Investigation Needed**	**Further Investigation Needed**	**Further investigation required**
6. Convery Wastewater to Another System for Treatment (e.g., City of Peterborough)	✓	✗	✗	**No**
7. Construct New Decentralized Wastewater Systems	✓	✗	✗	**No**

8.1.1 Alternative 1 – Do Nothing

As per the requirements of a Class EA, a "Do Nothing" alternative must be reviewed. This alternative provides a benchmark for what would occur should the proposed activities not proceed and provides a baseline for the other alternatives. "Do Nothing" proposes that no improvements or expansions would be undertaken for wastewater treatment. This would have a significant impact on the growth potential of the community and would impede progress as expected in the GMS and current Official Plan. Because of the preceding information, the "Do Nothing" alternative is not a recommended solution and will not be considered further.

8.1.2 Alternative 2 – Limit Growth

Limiting community growth would reduce or eliminate some of the projected flowrates and deficits. Limiting growth, however, would not address the existing concerns regarding contingency for wastewater treatment capabilities. Additionally, this alternative is contrary to the development objectives of the GMS and current Official Plan. Like the "Do Nothing" alternative, this does not meet approved planning policies. Based on the preceding information, this alternative is not recommended and will not be evaluated further.

8.1.3 Alternative 3 – Reduce Inflow and Infiltration

Similar to Alternative 2 - Limit Growth, reducing inflow and infiltration (I&I) may assist in reducing wastewater flow but would not address all existing concerns or reduce flows to the required magnitude. This alternative, on its own, does not adequately address the problem and opportunity statement, and is not recommended as a standalone solution. Some aspects of this alternative, however, comply with general sustainability goals and are recommended to be incorporated into the preferred solution.

8.1.4 Alternative 4 – Expand the Existing Wastewater Treatment Plant

The Township of Cavan Monaghan's existing wastewater system is serviced by a single wastewater treatment plant. This alternative proposes that the Township analyse the existing WWTP and determine what capacity upgrades can be made to allow for the existing wastewater plant to service a larger population. This alternative allows for optimizing and maximizing the use of the existing facility and infrastructure in the short term and long term this alternative is recommended and will be evaluated in further detail to formulate a preferred solution.

8.1.5 Alternative 5 – Construct a Second Wastewater Treatment Plant

Alternative 5 proposes constructing a second wastewater treatment plant. This would address the Problem and Opportunity statement but is likely to have significant cost and require increased effort to operate and maintain two (2) WWTPs. This alternative would require further investigation into the technical requirements (i.e., where the effluent would be discharged to the given the limitations to Baxter Creek and the Bay of Quinte Remedial Action Plan), economic impact, environmental impact, archaeological/cultural heritage, and social impact. It will be evaluated further.

8.1.6 Alternative 6 – Convey Wastewater to Another System for Treatment

Alternative 6 proposes that the Township connect to another system for wastewater treatment. The most likely option for this alternative would be for the Township to convey wastewater to the City of Peterborough. This alternative could adequately address the Problem and Opportunity statement but would have significant cost and other impacts to connect to a sanitary system 20 kilometers away. This alternative additionally contradicts the City of Peterborough's Official Plan's position on limiting cross border servicing. Therefore, this alternative is not recommended and will not be evaluated further.

8.1.7 Alternative 7 – Construct New Decentralized Wastewater Systems

Alternative 7 proposes determining new locations and building additional wastewater treatment systems within the Township of Cavan Monaghan. This alternative would be feasible for meeting future requirements. However, this alternative would have impacts including significant cost. It is because of these reasons that Alternative 7 is not recommended and will not be explored further.

8.2 Pre-Screening Results

Based on the screening above, the following alternatives did not meet the Problem and Opportunity Statement, or were not feasible against the evaluation criteria and were not considered further:

- Alternative 1 – Do Nothing
- Alternative 2 – Limit Growth
- Alternative 3 – Reduce Inflow and Infiltration
- Alternative 6 – Source from External Water Supply

- Alternative 7 – Construct New Decentralized Wastewater Systems

Based on the screening criteria in **Section 6.0**, the following alternatives met the problem and opportunity statement and were determined to be feasible against the evaluation criteria. These two alternatives will be explored further and incorporated into a preferred solution for wastewater treatment in the Township.

- Alternative 4 – Expand the Existing Wastewater Treatment Plant
- Alternative 5 – Construct a Second Wastewater Treatment Plant

8.2.1 Alternative 4 – Expand the Existing Wastewater Treatment Plant

Alternative 4 is the most feasible recommended alternative. This is because from a social, technical, archaeological, and environmental standpoint, it provides the least amount of impact while still providing the Township with additional wastewater treatment capacity. This alternative does not require property acquisition as the property is already owned by the Township, but further construction would have to occur. Before this construction could occur, further studies would be required to determine impacts to the natural environment, cultural heritage value and archaeological value of the undeveloped land can be mitigated. Furthermore, since this project is an expansion, the design and construction would need to be staged to provide minimal service interruptions to the existing operations of the facility. Based on the preceding information this alternative is likely to have the least economic impact. A further Schedule C Class EA, including assimilative capacity study, would be required for this alternative prior to design and construction.

8.2.2 Alternative 5 – Construct a Second Wastewater Treatment Plant

Alternative 5, though feasible requires a significant amount of further investigation. Firstly, since a new treatment plant would be at a different location, land acquisition is likely to be required. Secondly, this new location will have unknown environmental conditions, archaeological value, cultural heritage value and may cause impacts to surrounding property/neighbours during construction. In addition to this, construction of an independent facility would have a more significant financial impact on the Township. The issue of where the treated effluent could be discharged will be a major approval hurdle given the limitations of Baxter Creek and the Bay of Quinte Remedial Action Plan. Despite these concerns, constructing a new facility would be a less complex construction process due to the new facility being independent. Ultimately, if Alternative 5 were to become the preferred solution, more investigation would be needed before it could be determined to be entirely feasible. A

further Schedule C Class EA, including assimilative capacity study, would be required for this alternative prior to design and construction.

8.3 Detailed Evaluation of Alternatives

Table 8.2 details the legend for the evaluation criteria used in the detailed evaluation. The symbols used provide a visual aid which describe a range of positive/negative evaluations.

Table 8.3 presents the detailed evaluation of the listed alternatives in **Section 8.2**, compared to Alternative 1 – Do Nothing. Alternative 1 is included in the detailed evaluation as a baseline, despite being screened out previously. The evaluation is further expanded upon with descriptions of the preferred solutions in **Section 12.0** and recommended next steps in **Section** Error! Reference source not found..

Table 8.2: Legend for Evaluation Criteria

Least Positive/Most Negative	More Negative Than Positive	Moderate	More Positive Than Negative	Most Positive/Least Negative
				

Table 8.3: Detailed Evaluation of Shortlisted Wastewater Treatment Alternatives

Criteria	Alternative 1 Do Nothing		Alternative 4 Expand Existing Wastewater Treatment Plant		Alternative 5 Construct a Second Wastewater Treatment Plant	
Social	• Would not support planned future growth and provincial mandate. • Would not require property acquisition and would not impact surrounding areas.		• Would not require property acquisition. • Aesthetic impacts similar to current surrounding properties. • Moderate impact to nearby neighbours during construction.		• Would require land acquisition. • Aesthetic impacts to additional surrounding properties. • Moderate impacts to nearby neighbours during construction. • Potential impacts to nearby land uses depending on effluent discharge location.	
Technical	• Capacity would be constrained to 8,242 m^3/day. • No technical changes would be made.		• Assimilative capacity study required to confirm effluent discharge capacity. • Must carefully stage construction to maintain current plant operation. • Design and construction method to take into consideration that expansion area may be in wetland/artesian area. • Can optimize and maximize use of existing infrastructure.		• Assimilative capacity study required to confirm effluent discharge location and capacity. • Less complex construction than Alternative 4 since new location is independent. • More complex pumping flow arrangements to get flow to new plant. • New property to consider spatial requirements and constraints.	
Cultural	• No construction and therefore no impacts to cultural heritage or archaeological resources.		• Possible archaeological & cultural heritage potential as nearby land has not been developed. • Cultural Heritage investigations required.		• Unknown archaeological and cultural heritage conditions until specific site is selected; cultural heritage investigations required.	
Natural Environment	• Would not require construction and therefore no anticipated impacts. • Higher flows without expanding plant may cause bypasses to the environment.		• Potential impacts to wildlife, vegetation, and wetlands. • Potential impacts to effluent discharge location would need to be investigated through an assimilative capacity study or other investigations. • Further investigations required during project specific Schedule C Class EA		• Unknown environmental conditions until specific site is selected; environmental investigation will be required. • Investigation required to confirm viability, capacity and impacts on effluent discharge location. • Further investigations required during project specific Schedule C Class EA	
Financial	**$ $**		**$ $ $**		**$ $ $ $**	
Summary	Not recommended due to non-compliance with Provincial Mandate		**Recommended Alternative**		Not recommended due to extensive impact and significant further investigation required	

9.0 Wastewater Collection and Conveyance

Wastewater collection and conveyance upgrades are anticipated to be required based on the anticipated long-term growth in Millbrook by 2051. The solutions required will be split into requirements for the sanitary North Catchment Area and South Catchment Area. Information pertaining to the catchment areas was discussed in **Section 4.1**.

To determine the future requirements of the wastewater collection system, the system was modelled in the PCSWMM software program and analyzed for areas needing improvement. Solutions for wastewater collection and conveyance in the North and South catchments were determined with the goal of achieving the required flushing velocity, reducing surcharging and/or obtaining the required capacity(ies) at the existing Tupper St. Sewage Pumping Station (SPS) and new future SPS.

The solutions presented in this section are informed by and based on the preferred solution for the Wastewater Treatment Plant (WWTP) in **Section 8.0**. The preferred solution was Alternative 4 – Expand the Existing Wastewater Treatment Plant and therefore Wastewater Collection and Conveyance options are associated with expansion of the existing WWTP.

Figure 9.1 below is a map showing the North Catchment Area and South Catchment Area. The map also includes an amalgamation of the Oak Ridges Moraine (ORM) and Natural Core Area features which separate the catchment areas.

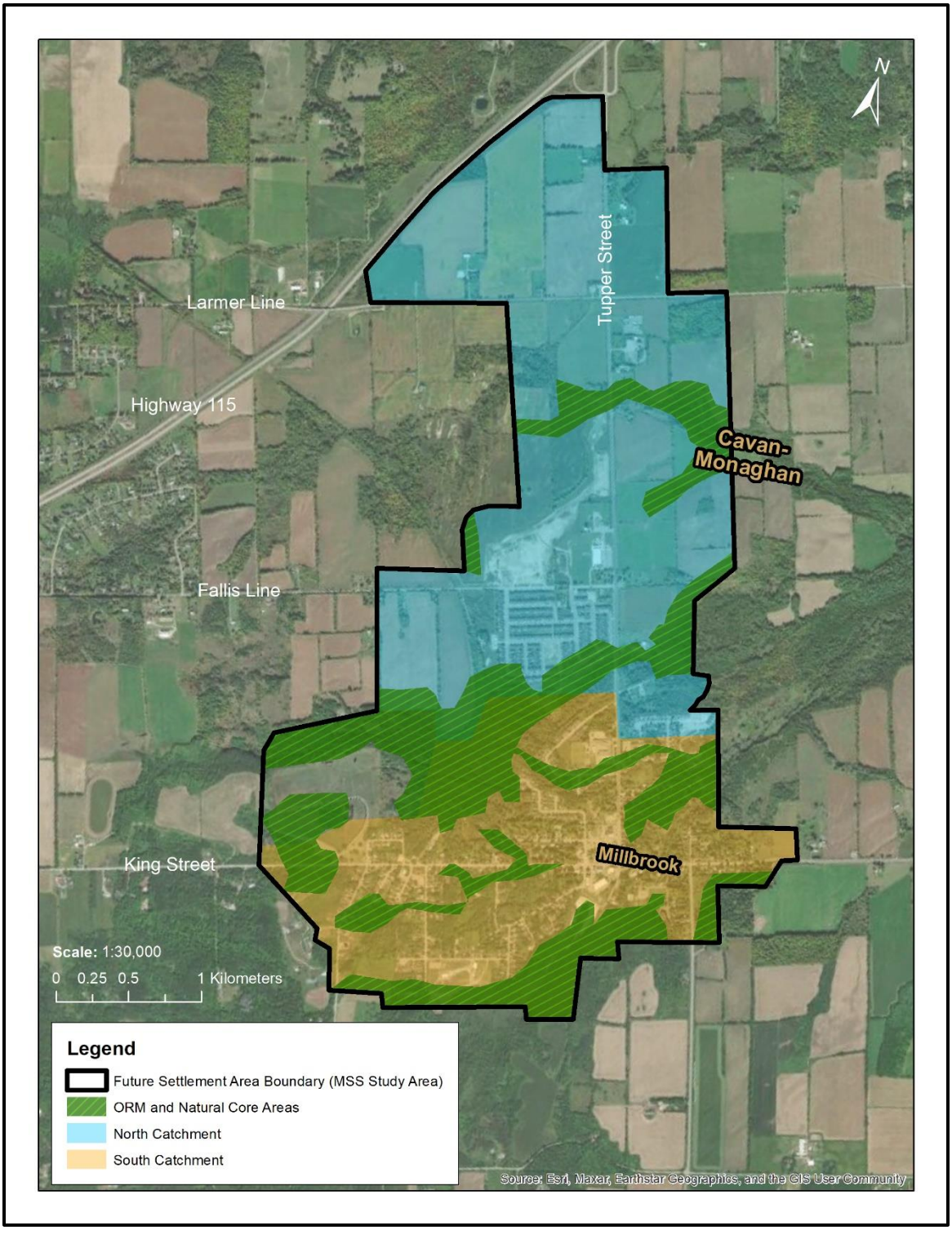


Figure 9.1: Aerial Map of North and South Catchment Areas

9.1 Identification of Alternatives for North Catchment – Wastewater Collection

The North Catchment Area encompasses the sanitary sewer network along and North of Centennial Lane. This catchment area conveys flows by gravity to the WWTP's Raw Sewage Lift Station (Raw Sewage LS).

As shown in **Figure 9.1**, the northernmost sections of Millbrook are separated from the southern sections by land designated as Natural Core Area in the Oak Ridges Moraine Conservation Plan. The northernmost sections also contain a mix of urban employment and residential land. It is important to note that based on the topography, there is a depression (around the intersection of County Road 10 and Larmer Line) which will be unable to convey flow by gravity to the WWTP. Due to this, the areas north of the Natural Core Area near Larmer Line will need to be serviced by a new Sewage Pumping Station (SPS). The SPS can then be used to pump flows from the lower topographical area to the gravity system near the intersection of County Road 10 and Fallis Line. Based on wastewater modelling which strategically oversized the sanitary sewers to the WWTP, the estimated peak wastewater flow that the SPS will need to service is 6,480 m^3/day (75 L/s) It should be noted that this figure is strategically inflated to provide flexibility for the employment area flows, allowing for the SPS to adequately service the area even if the projected flow estimates are higher than anticipated.

Table 9.1 below is a chart detailing the summary of the screening criteria and results for each alternative.

Table 9.1: Long List of Alternatives and Screening

Alternatives	Does the alternative address the problem and opportunity statement?	Is the alternative technically and economically feasible?	Can the alternative be implemented without significant impacts?	Carry forward for detailed evaluation? (Yes/No)
1. Do Nothing	✗	✗	✗	No
2. Construct New SPS and Convey Flow to West Sewer Shed	✓	✗	✗	No
3. Construct New SPS and Convey Flow to East Sewer Shed	✓	✓	✓	Yes

9.1.1 Alternative 1 – Do Nothing

As per Class EA requirements, a "Do Nothing" alternative must be reviewed. This alternative provides a benchmark for what would occur should the proposed activities not proceed and provides a point of reference for other alternatives.

"Do Nothing" suggests that no improvements or expansions would be undertaken for wastewater collection and conveyance. This would have a significant impact on growth potential and would contravene the Official Plan and GMS recommendations. In addition, this solution is not technically feasible since the new employment area cannot be serviced by gravity drainage and an SPS is required. Because of the preceding information, the "Do Nothing" alternative is not a recommended solution and will not be evaluated further.

9.1.2 Alternative 2 – Construct New SPS and Convey Flow to West Sewer Shed

Alternative 2 proposes that the employment area near County Road 10 and Larmer Line be serviced by pumping wastewater via the new SPS to the Millbrook WWTP following a path to the West Sewer Shed. The West Sewer Shed currently comprises the existing subdivision (southwest) and future subdivision (northwest) of the intersection of County Road 10 and

Fallis Line, with a sanitary sewer network. The exact location of the new SPS will need to be determined in a future SPS Class EA.

In the absence of detailed sanitary sewer information for the future subdivision, the new SPS discharge flow was assigned to the maintenance hole located southwest of the intersection of County Road 10 and Fallis Line. The path follows Highlands Blvd southeastward to County Road 10, southbound on County Road 10, and then eastbound along Centennial Lane to the WWTP. **Figure 9.2** below shows the proposed path.

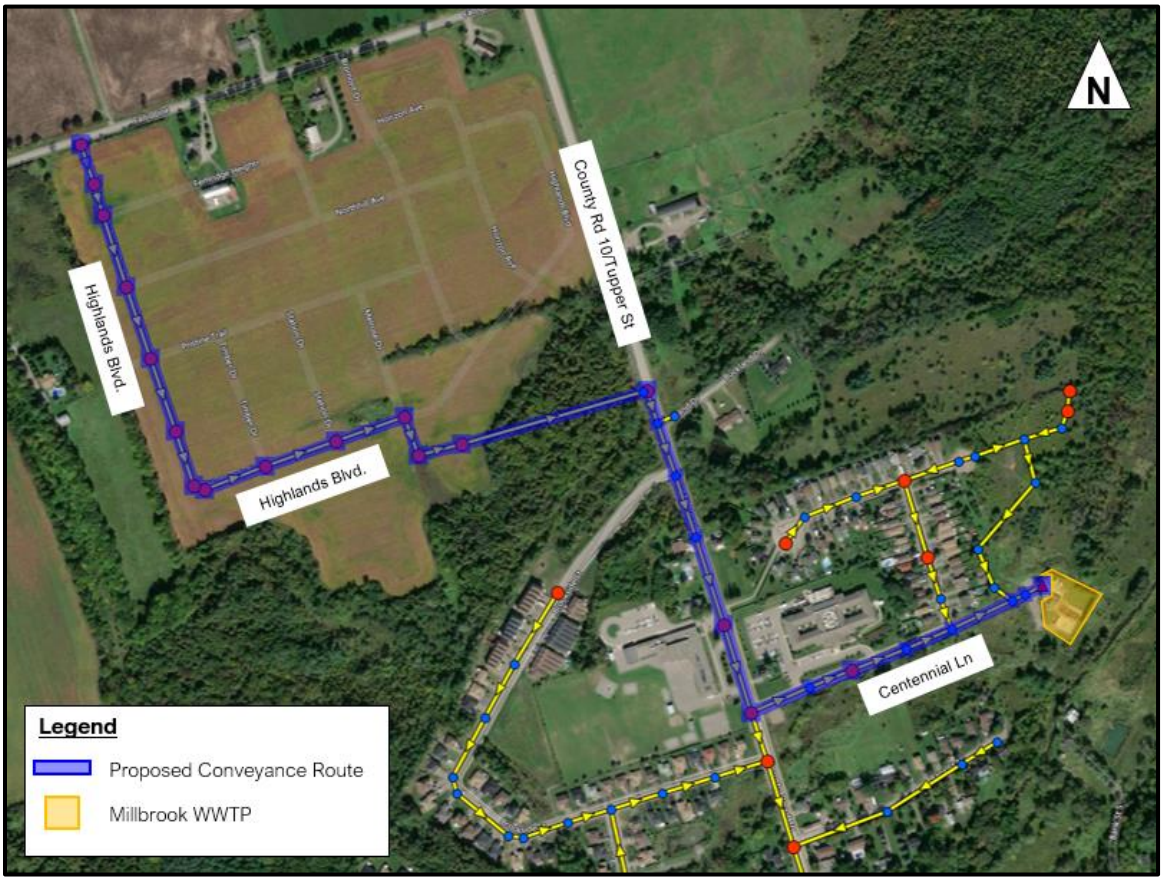


Figure 9.2: North Catchment Proposed Conveyance Route, West Side

9.1.3 Alternative 3 – Construct New SPS and Convey Flow to East Sewer Shed

Alternative 3 proposes that the employment area near County Road 10 and Larmer Line be serviced by pumping wastewater via the new SPS and forcemain to the Millbrook WWTP. To model and evaluate this alternative, it was assumed that the new SPS would discharge flow to the maintenance hole located northeast of the intersection of Coldbrook Drive and Century Blvd to the East Sewer Shed. The East Sewer Shed currently comprises the subdivision being constructed on the East side of Coldbrook Drive, with a sanitary sewer network. North of this

subdivision, land use includes a mix of commercial and residential. The exact location of the new SPS, forcemain route, and discharge location would need to be determined in a future study.

In the absence of detailed sanitary sewer information for future land north of Coldbrook Drive, the new SPS discharge flow was assigned to the maintenance hole located northeast of the intersection of Coldbrook Drive and Century Blvd. The path follows Coldbrook Drive southbound to Centennial Lane, then eastbound along Centennial Lane to the WWTP. **Figure 9.3** below shows the proposed path.

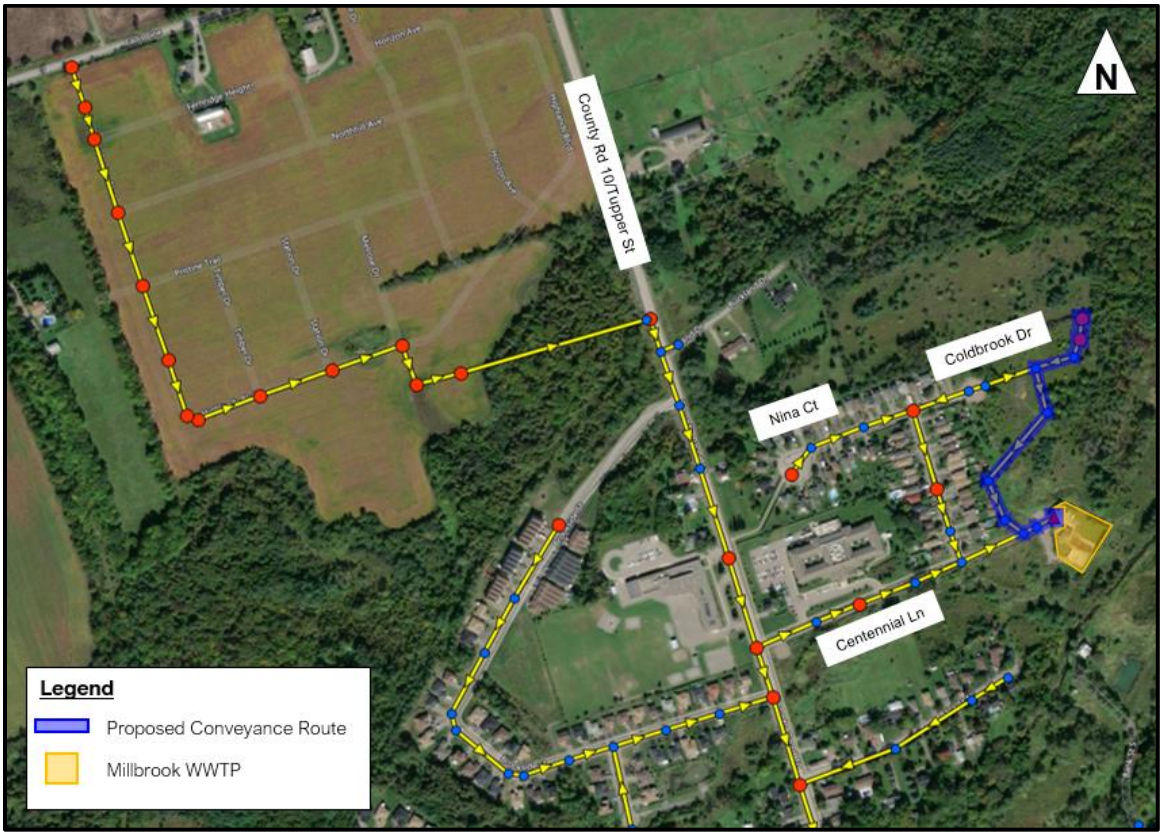


Figure 9.3: North Catchment Proposed Conveyance Route, East Side

9.2 Detailed Evaluation of Alternatives for North Catchment

Alternatives 2 and 3 were simulated in the PCSWMM model developed for this study. The model found no surcharging in the system under Dry Weather Flow (DWF) conditions. In Alternative 2, however, there was surcharging throughout the system during Wet Weather Flow (WWF) conditions. Based on the model results, surcharging would occur throughout the path at 12 of the 27 maintenance holes. If this solution was carried forward as the preferred solution, significant upgrades to the existing sewer across the whole path would be required.

In comparison, in Alternative 3, surcharging in the system would be minimized to only two (2) maintenance holes (out of 10), and thus only a short section of existing sewer would need to be upgraded.

Figure 9.4 and **Figure 9.5** below demonstrate the WWF profiles of the sanitary gravity sewers through the west sewer shed under Alternative 2 and east sewer shed under Alternative 3 respectively. The complete wastewater modelling results are included in **Appendix 7**. In these figures, a dark blue line with upside down triangle at the maintenance hole denotes surcharging of the maintenance hole.

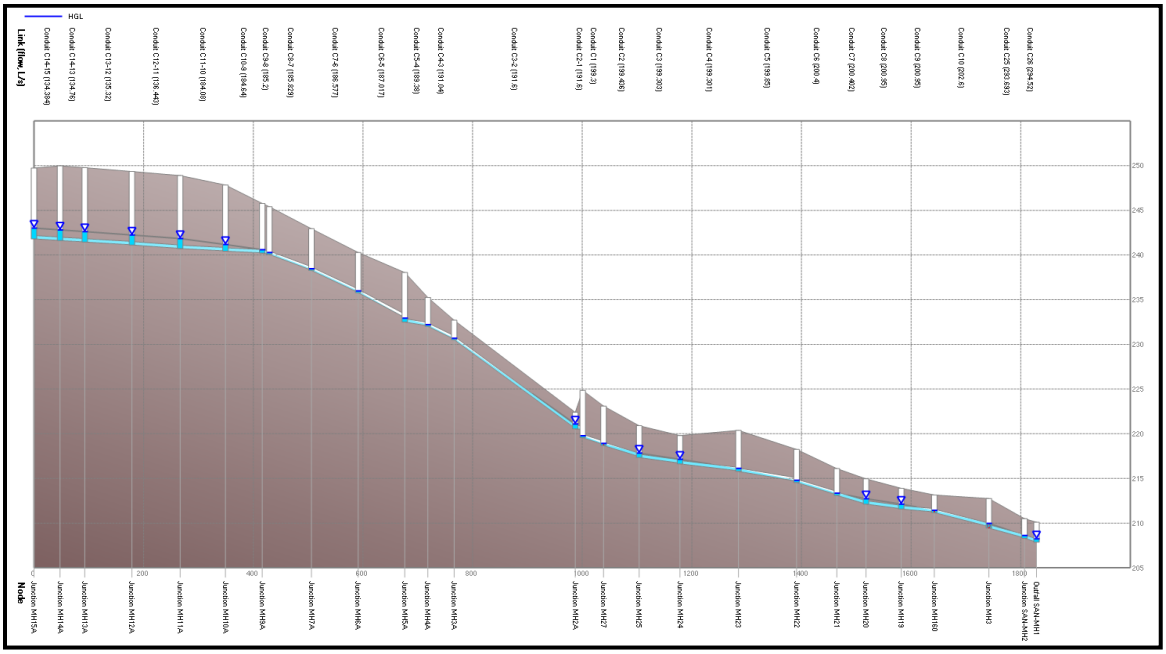


Figure 9.4: WWF Profile, North Catchment Alternative 2 - West Path

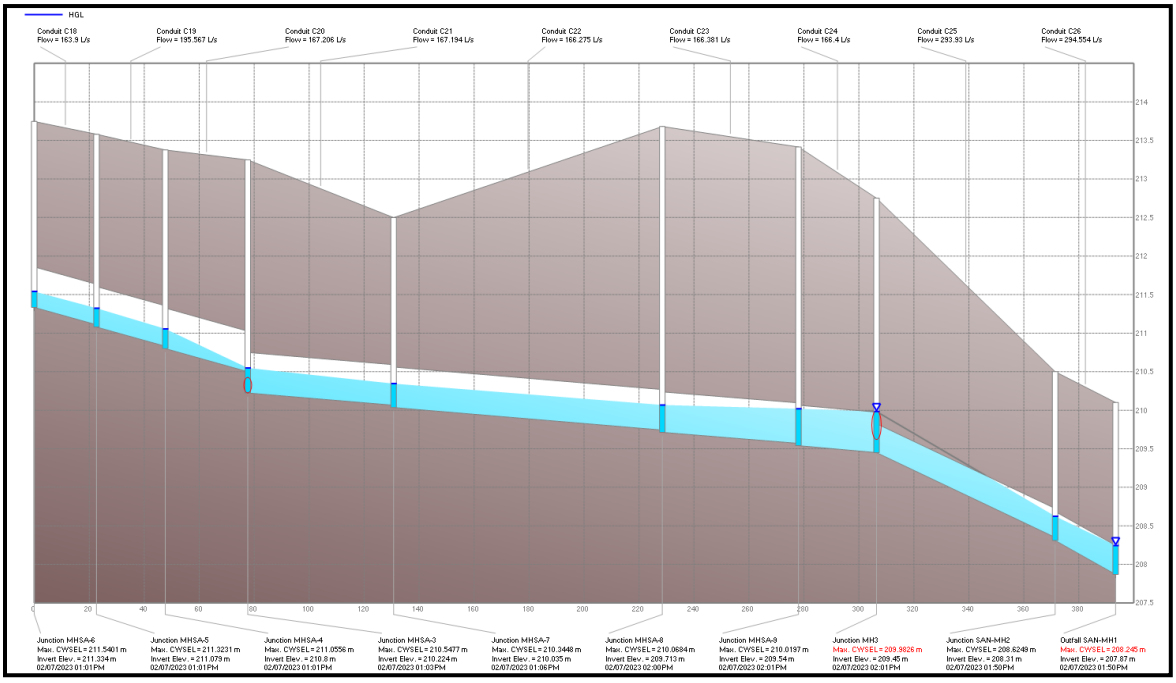


Figure 9.5: WWF Profile, North Catchment Alternative 3 - East Path

Based on the preceding information, Alternative 3 is the preferred strategy for wastewater conveyance for the North Catchment due to its performance in the PCSWMM model and the minimized surcharging compared to Alternative 2. Despite Alternative 3 performing better than Alternative 2, there is still some surcharging along the proposed Alternative 3 path which needs to be addressed. Based on modelling results, surcharging is mitigated when sanitary sewers East of Century Blvd on Centennial Lane are upsized to 525mm from the current 350mm sanitary sewers. This distance is approximately 100m and consists of the force main leading directly to the Millbrook WWTP.

To summarize, Alternative 3 is the preferred solution. This includes the construction of a new SPS and forcemain that conveys flow to the East Sewer Shed, along with approximately 100 meters of upgrades to sanitary sewers along Centennial Lane, east of Century Blvd. The location of the SPS and forcemain would be determined through future study.

9.3 Identification of Alternatives for South Catchment – Wastewater Collection

The South Catchment area consists of what is referred to as the Millbrook Urban Settlement Area. This area encompasses the sanitary sewer network South of Centennial Lane and extends to the east/south/west borders of the Millbrook Built-Up Area (BUA). This catchment area conveys flows by gravity to the Tupper Street SPS.

As noted in **Section 4.0** the existing peak flow to the Tupper St. SPS is estimated to be 3,855 m^3/day (44.6 L/s) and the forecasted 2051 peak flow is 4,320 m^3/day (50 L/s). The existing rated capacity of the Tupper St. SPS is 3,053 m^3/day (35.3 L/s). Thus, the Tupper St. SPS currently does not have sufficient capacity for existing and forecasted future flows. However, the Tupper St. SPS was designed with a large emergency storage volume, which compensates for the deficit in rated capacity to deal with existing peak flows.

Table 9.2 is a chart detailing the summary of the screening criteria and results for each alternative.

Table 9.2: Long List of Alternatives and Screening

Alternatives	Does the alternative address the problem and opportunity statement?	Is the alternative technically and economically feasible?	Can the alternative be implemented without significant impacts?	Carry forward for detailed evaluation? (Yes/No)
1. Do Nothing	✗	✗	✗	No
2. Upgrade the Existing SPS	✓	✓	✓	Yes

9.3.1 Alternative 1 – Do Nothing

As per Class EA requirements, a "Do Nothing" alternative must be reviewed. This alternative provides a benchmark for what would occur should the proposed activities not proceed and provides a point of reference for other alternatives.

"Do Nothing" suggests that no improvements or expansions would be undertaken for wastewater collection and conveyance. This would have a significant impact on the growth potential of the community and would impede progress as expected in the GMS and Official Plan. In addition, this solution may result in the overflow of sanitary sewage to the environment (as the Tupper St. SPS pumps are undersized) and could cause environmental impacts. Because of the preceding information the "Do Nothing" alternative is not a recommended solution and will not be evaluated further.

9.3.2 Alternative 2 – Upgrade the Existing SPS

This alternative proposes that the Township replace the existing pumps at Tupper St. SPS with larger pumps while keeping within the available footprint of the existing Tupper St. SPS wet well. When the existing SPS was analysed, it was found that it is currently undersized for the existing flows in the South Catchment. Therefore, it is recommended that the Tupper St. SPS be upsized to accommodate the existing and future flows. In order to increase the rated capacity of the Tupper St. SPS, the anticipated works are as follows (but not limited to):

- Replacement of the three (3) existing submersible pumps with larger capacity submersible pumps
- Related upgrades to accommodate larger pumps (i.e., piping modifications, structural hatch adjustments, electrical modifications, etc.)

9.4 Detailed Evaluation of Alternatives for South Catchment

Alternative 2 was simulated in the wastewater conveyance model. The model found no surcharging of sanitary sewers under DWF and WWF conditions. Thus, this alternative does not require the upsizing of existing sanitary sewers in the Millbrook BUA system. In addition to this, as previously discussed the Tupper St. SPS is currently undersized for the existing flows in the South Catchment. It is recommended that the SPS be upsized to not only accommodate future flows, but the existing flows as well. Because of the preceding information, Alternative 2 is the preferred solution to upgrade the existing Tupper St. SPS.

For further information on this evaluation, detailed modelling information is included in **Appendix 7**.

10.0 Water Supply

The current rated capacity of the Millbrook water supply system is 3,000 m^3/day. It is recommended that the Township develop water supplies in a timely manner, anticipating the progress of development, such that demand would not exceed 85% of available capacity at any given time. This will provide room for contingency, emergency situations and minimal service interruptions. Based on future population estimates, employment projections and the anticipated rate of growth, the Millbrook water supply would reach 85% of its rated capacity by approximately 2029. By 2051 a total rated capacity of 6,214 m^3/day would be required. Additional water supply capacity will be required to service growth past the estimated timeframe of 2031. **Figure 10.1** below displays the forecasted water supply maximum day demand for the Millbrook Water Supply System.

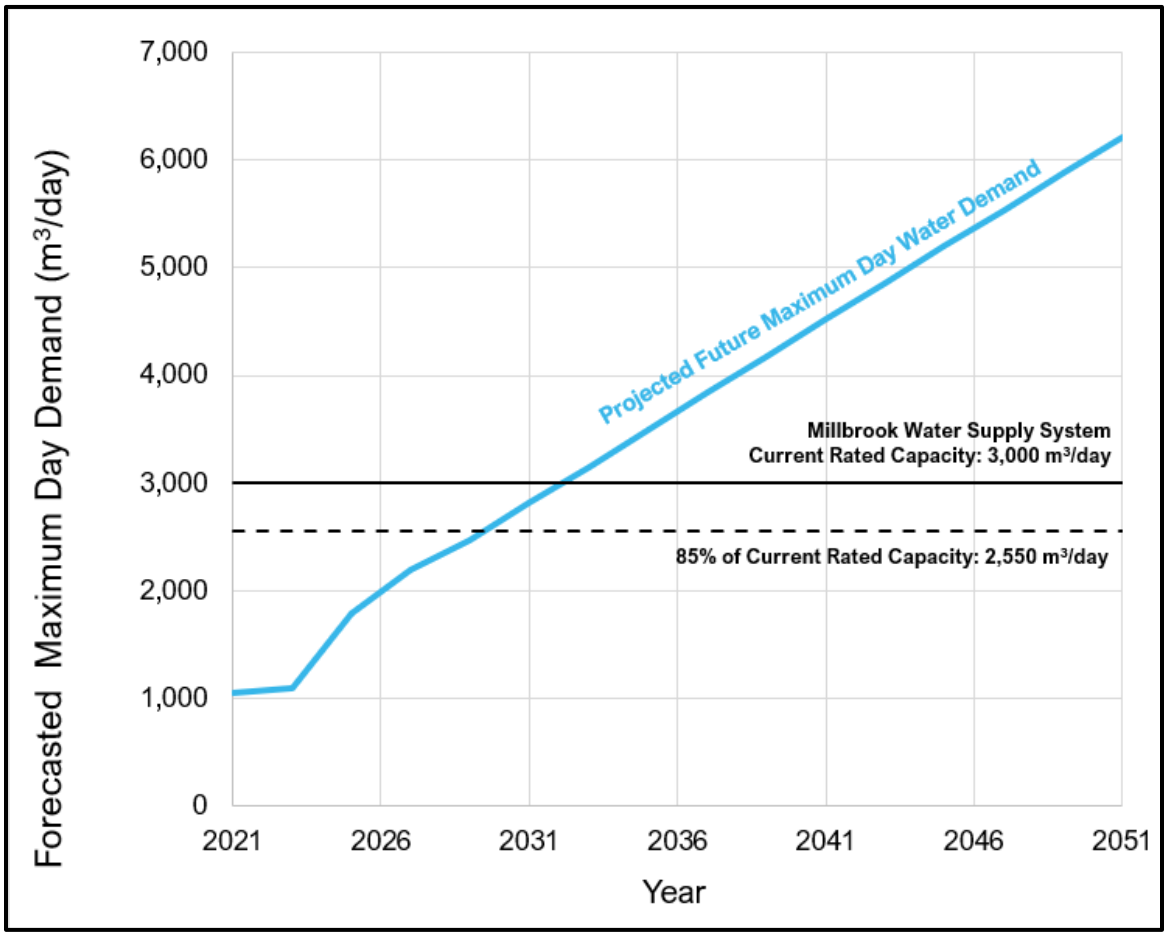


Figure 10.1: Forecasted Water Supply Maximum Day Demand

This section proposes a series of alternatives to expanding the water supply system in Millbrook and identifies which alternatives would be the most feasible through a pre-screening process.

10.1 Identification of Alternatives – Water Supply

This section describes proposed solutions that were identified to respond to forecasted servicing shortfalls in the water supply system. The viable alternatives were shortlisted and evaluated further. **Table 10.1** is a chart detailing the summary of the assessment criteria and results for each alternative.

Table 10.1: Long List of Alternatives and Screening

Alternatives	Does the alternative address the Problem & Opportunity Statement?	Is the alternative technically and economically feasible?	Can the alternative be implemented without significant impacts?	Carry forward in detailed evaluation? (Yes/No)
1. Do Nothing	✗	✗	✗	**No**
2. Limit Growth	✗	✓	✗	**No**
3. Increase Water Conservation	✗	✓	✓	**Combine with preferred**
4. Expand Existing Groundwater Well Supply	✓	✓	✓	**Yes**
5. Find Additional Groundwater Well Supply	✓	✓	✓	**Yes**
6. Connect to External Water Supply System	✓	✗	✗	**No**
7. Construct New Surface Water Treatment Plant	✓	✗	✗	**No**

10.1.1 Alternative 1 – Do Nothing

As per Class EA requirements, a "Do Nothing" alternative must be reviewed. This alternative provides a benchmark for what would occur should the proposed activities not proceed and provides a point of reference for other alternatives.

"Do Nothing" suggests that no improvements or expansions would be undertaken for water supply. This would have a significant impact on the growth potential of the community and would impede progress as expected in the GMS and current Official Plan. Because of the preceding information the "Do Nothing" alternative is not a recommended solution and will not be evaluated further.

10.1.2 Alternative 2 – Limit Growth

Limiting community growth would reduce or eliminate some of the projected supply requirements, however, limiting growth would not address the existing concerns regarding contingency for water supply. Additionally, this alternative was contrary to the development objectives of the GMS and current Official Plan and is similar to the "Do Nothing" alternative. Based on the preceding information this alternative is not recommended and will not be evaluated further.

10.1.3 Alternative 3 – Reduce Water Demands by Water Conservation and Efficiency

Water conservation and efficiency may assist in reducing projected water supply deficits by reducing the average and maximum day water demands, but it would not address all existing concerns. Ultimately, relying on water conservation and efficiency alone would not address projected growth demands. It is because of this that Alternative 3 is not a recommended solution and will not be evaluated further. Some aspects of this alternative, however, fall in line with general sustainability goals and are recommended to be incorporated into the preferred solution.

10.1.4 Alternative 4 – Expand Existing Groundwater Well Supply

Alternative 4 considered the option to expand the existing groundwater well site coupled with the required treatment facilities upgrades to meet supply requirements. The wellfield is reported to have an adequate quality and quantity of water available. Further hydrogeological investigations will be required to confirm. Ideally, the facility is recommended to be expanded

through a modular approach to allow capacity to be increased in stages, in conjunction with forecasted population growth.

The existing water supply has been stable since the construction of the facility. Expansion of the existing facility to allow for primary disinfection of the additional water supply may be feasible. This could address projected growth demands and concerns regarding security of supply.

Preliminary screening of this alternative against the evaluation criteria indicated that this alternative was viable and therefore was added to the list of alternatives to be reviewed and evaluated in detail.

10.1.5 Alternative 5 – Build New Groundwater Wells at Different Location

This alternative can be considered in conjunction with Alternative 4 - expand existing groundwater well supply or can be a stand-alone option if further investigations deem that Alternative 4 is not viable. Depending on where the new groundwater source is located, it would require treatment facilities/pump house for primary disinfection. Quality and quantity of new groundwater supplies would need to be assessed once further hydrogeological investigations are undertaken in a separate Class EA. This future Class EA would also need to determine the sustainable yield of the groundwater/aquifer, to confirm that no significant impact to the groundwater system would occur. In addition to this, archaeological and cultural heritage investigations would need to be done on the new well site(s).

Should all further investigation suggest that the yield would support the projected population and impacts would be minimal/mitigable, Alternative 5 would address growth demands and concerns regarding security of supply. Having new groundwater wells at different locations (and possibly a different aquifer) would add security to the water system rather than having all wells based in the same aquifer/well field.

Preliminary screening of this alternative against the evaluation criteria indicated that it was feasible and therefore was added to the list of alternatives to be reviewed and evaluated in detail. This alternative, though recommended, requires further investigation overall.

10.1.6 Alternative 6 – Source from External Water Supply

This alternative examined the option to obtain potable water from a different water supply system. The City of Peterborough is noted as the closest water supply system to Millbrook.

This alternative would require the construction of a conveyance system to bring water from a nearby community. This would also require a pumping station from the source, possible

intermediary storage, and a receiving reservoir with pumping station in Millbrook. Preliminary screening of this alternative against the evaluation criteria indicated that there are concerns regarding financial, technical, and environmental aspects. Due to the length of the required transmission main, there would also be the potential for social and archeological issues along the selected route. This option also contradicts the City of Peterborough's Official Plan.

Based on the preceding information, this alternative is not a recommended solution and will not be evaluated further.

10.1.7 Alternative 7 – Construct A New Surface Water Treatment Plant

Alternative 7 proposes constructing a new surface water treatment plant. This alternative would address the problem and opportunity statement but would come with significant cost and possible impacts to the land it would be occupying. Notably, undergoing construction of a new surface water treatment plant at a new location would require a full environmental assessment including site evaluation and property acquisition as well as a screening of land for impacts to natural environment, social impact, cultural heritage value and archaeological value. Additionally, a potential surface water source (Otonabee River) is a large distance from the Township. Ultimately because of the significant cost, likely impacts and distance from a possible surface water source this alternative is not recommended as a preferred solution and will not be evaluated further.

10.2 Pre-Screening Results

Based on the screening above, the following alternatives did not meet the Problem and Opportunity Statement, or were not feasible against the evaluation criteria and were not considered further:

- Alternative 1 – Do Nothing
- Alternative 2 – Limit Community Growth
- Alternative 3 – Reduce Water Demands by Water Conservation and Efficiency
- Alternative 6 – Source from External Water Supply
- Alternative 7 – Construct New Surface Water Treatment Plant

Based on the screening criteria in **Section 6.0**, the following alternatives met the problem and opportunity statement and were determined to be feasible against the evaluation criteria.

These two alternatives will be explored further and incorporated into a preferred solution for water supply for Millbrook.

- Alternative 4 – Expand the Existing Groundwater Well Supply
- Alternative 5 – Find Additional Groundwater Well Supply

10.2.1 Alternative 4 – Expand Existing Groundwater Well Supply

Alternative 4 is a recommended alternative for the water supply system expansion in Millbrook. This is because, based on the criteria of cost, technical requirements, social impact, archaeological/cultural heritage impact, and environmental impact it has the most positive effect. Most notably this alternative does not require further land acquisition, and it is anticipated that since the land has already been disturbed, the likelihood of archaeological/cultural heritage value is low. Since the land has already been disturbed the impacts to wildlife and habitat resources are likely to be minimal.

A further hydrogeological assessment and environmental assessment would need to occur. This is to not only to confirm the impacts to groundwater and aquifer conditions, but also to confirm water quantity and quality. By doing so, the Township can determine if this groundwater well could supply the existing and future population or if additional supply is required elsewhere. This solution has the possibility of providing supply redundancy, and improvement to existing infrastructure.

10.2.2 Alternative 5 – Find Additional Groundwater Well Supply

Alternative 5 is a recommended solution since new water supply facilities would be independent from the existing facility and it would provide a less complex construction than Alternative 4. In addition, it also provides an opportunity for supply redundancy and increased security in the water supply system.

Despite these advantages, the alternative poses a greater impact to nearby neighbours due to possible land acquisition, longer construction time and possible restriction in certain activities or land uses to comply with Source Water Protection Requirements. In addition to this, further analysis of proposed sites will be required to determine that there is no impact to archaeological and cultural heritage value, natural environmental assessment, and hydrogeological investigations.

10.3 Detailed Evaluation of Alternatives

The legend for evaluation criteria (**Table 10.2**) is the same as the one used in **Section 8.3**

Table 10.3 details the detailed evaluation of the listed alternatives in **Section 8.2**, compared to Alternative 1 – Do Nothing. Alternative 1 is included in the detailed evaluation as a baseline, despite being screened out previously. The evaluation is further expanded upon with descriptions of the preferred solutions in **Section 12.0** and recommended next steps in **Section** Error! Reference source not found..

Table 10.2: Legend for Evaluation Criteria

Least Positive/Most Negative	More Negative Than Positive	Moderate	More Positive Than Negative	Most Positive/Least Negative
				

Table 10.3: Detailed Evaluation of Water Supply Alternatives

Criteria	Alternative 1 Do Nothing		Alternative 4 Expand Existing Groundwater Well Supply		Alternative 5 Find Additional Groundwater Well Supply	
Social	• Would not support planned future growth and provincial mandate. • Would not require property acquisition and would not impact surrounding areas.		• Would not require property acquisition. • Potential impacts to nearby land use due to adjustments to the current Well Head Protection Area (WHPA) • Moderate impacts to nearby neighbours during construction; shorter construction than Alt.5		• Would require land acquisition. • Potential impacts to nearby land use due to Well Head Protection Area (WHPA). • Moderate impacts to nearby neighbours during construction; longer construction duration than Alt.4	
Technical	• Capacity would be constrained to 3,000 m^3/day with no opportunity for supply redundancy. • No technical changes would be made.		• Hydrogeological investigation required to confirm water quality/quantity is sufficient for future demands. • More complex construction than Alt.5 since existing facility must remain operational. • May have space constraints. • Provides opportunity for well redundancy/increased firm capacity.		• Hydrogeological investigation required to confirm water quantity/quality is sufficient for future demands. • Less complex construction since facility is independent. • New property to consider spatial requirements. • Provides opportunity for supply and aquifer redundancy.	
Cultural	• No construction and therefore no impacts to cultural or archaeological resources.		• Current property has been previously disturbed; therefore, would anticipate limited cultural potential. • Potential for built heritage resources and cultural heritage landscapes.		• Unknown archaeological and cultural conditions until specific site is selected; cultural investigations will be required.	
Natural Environment	• Would not require construction and therefore no anticipated impacts. • Climate change may impact aquifer and since all existing municipal wells are in same location, there is increased vulnerability to water supply		• Current facility has been disturbed; therefore, would anticipate limited to no impacts to wildlife and vegetation. • Further investigation required to confirm viability and impacts on groundwater/aquifer conditions. • Climate change may impact aquifer and since all existing municipal wells are in same location, there is increased vulnerability to water supply.		• Unknown environmental conditions until specific site is selected; environmental investigation may be required. • Investigation required to confirm viability and impacts on groundwater conditions. • Climate change may not impact well supply as much due to wells being fed by different aquifers.	
Financial	**$ $**		**$ $ $**		**$ $ $ $**	
Summary	Not recommended due to non-compliance with Provincial Mandate		**Recommended Alternative**		**Recommended Alternative**	

11.0 Water Storage and Distribution

Millbrook has an existing water standpipe with a usable capacity of 2,115 m^3. The standpipe provides water storage for the entire existing Millbrook Settlement Area including the lower pressure zone of the Millbrook Built-Up Area and the higher-pressure zone of the new development area near the standpipe. Due to the local topography, the new development area has a similar ground elevation as the standpipe. In 2016, in order to provide adequate distribution pressure, fire flow and service to the higher-pressure zone, a Millbrook Booster Pumping Station (BPS) was built with the standpipe. The Millbrook Booster Pumping Station was designed for a phased capacity increase to match the phased development in the area. The Millbrook Booster Pumping Station was designed such that the existing pumps can be replaced with larger pumps, or a 4^{th} pump can be added to increase capacity within the existing building. This activity is considered exempt from the Class EA process under the 2023 Class EA amendment. Therefore, this project does not require alternatives to be identified and evaluated.

It is recommended for the Township to plan ahead of storage demands reaching 100% of the available storage and aim to undertake the required Class EA, design, and construction when the storage demands are at 85% of the usable volume. This will allow for a timely increase in storage volume to accommodate growth and act as buffer during emergency situations to minimize service interruptions. Millbrook's forecasted water demands will use up 85% of the water standpipe's useable storage volume (1,798 m^3) by approximately 2027. Additional water storage capacity would be required to service growth beyond 2029 (estimated). By 2051, a storage volume of approximately 4,912 m^3 would be required. **Figure 11.1** below displays the forecasted maximum water storage requirements for the Millbrook Water Standpipe Storage.

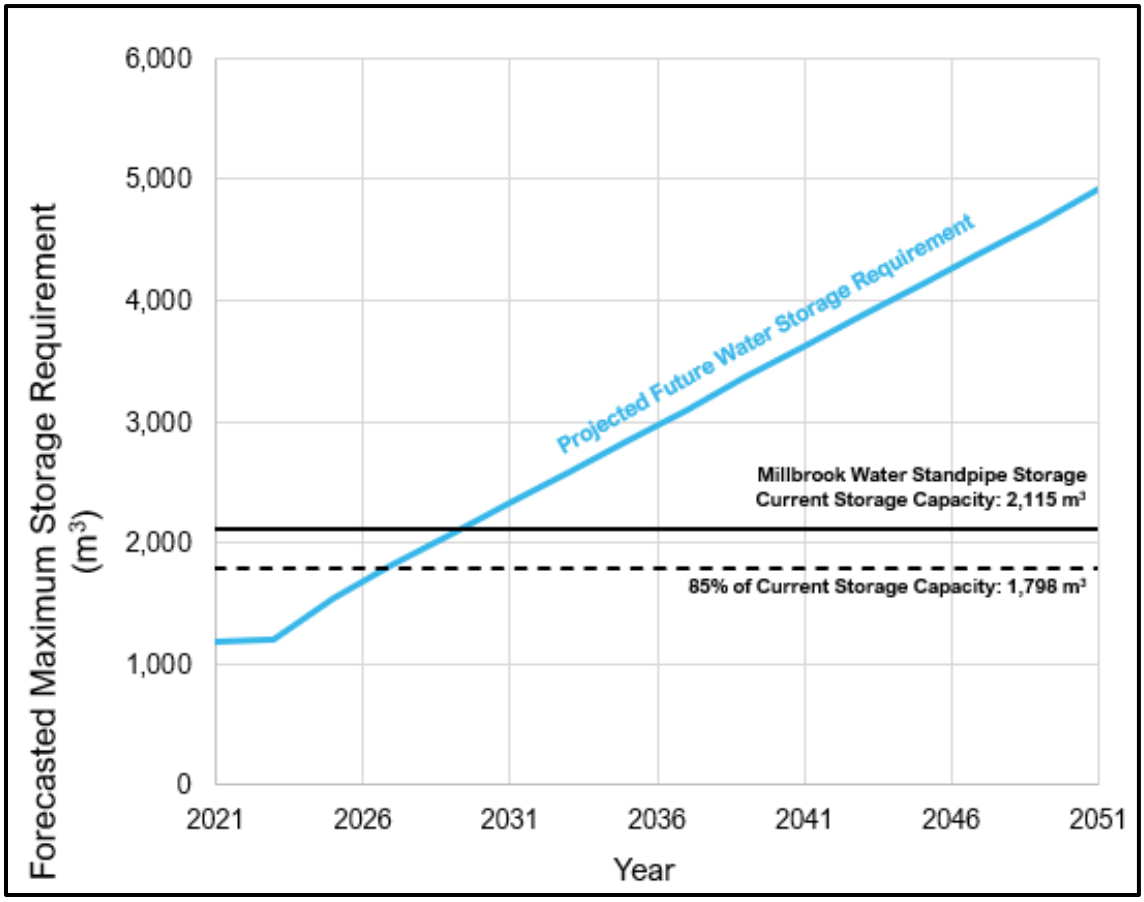


Figure 11.1: Forecasted Maximum Water Storage Requirement from 2021 to 2051

This section proposes a series of alternatives to increasing the water storage system in Millbrook and identifies which alternatives would be the most feasible as solutions.

11.1 Identification of Alternatives – Water Storage and Water Distribution

This section describes proposed alternatives that were identified to respond to water storage needs. The viable alternatives were shortlisted and evaluated further. **Table 11.1** is a chart detailing the summary of the assessment criteria and results for each alternative.

Table 11.1: Long List of Alternatives and Screening

Alternatives	Does the alternative address the Problem & Opportunity Statement?	Is the alternative technically and economically feasible?	Can the alternative be implemented without significant impacts?	Carry forward in detailed evaluation? (yes/no)
1. Do Nothing	✗	✗	✗	**No**
2. Limit Growth	✗	✓	✗	**No**
3. Increase Water Conservation	✗	✓	✓	**Combine with Preferred**
4. Add Additional Water Storage at New Location and Retain Standpipe	✓	✓	✓	**Yes**
5. Build New Water Reservoir and Decommission Existing Tank	✓	✗	✗	**No**

11.1.1 Alternative 1 – Do Nothing

As required in the Class EA, a "Do Nothing" alternative must be reviewed. This alternative provides a benchmark for what would occur should the proposed activities not proceed and provides a point of reference for other alternatives.

"Do Nothing" suggests that no improvements or expansions would be undertaken for the system. This would have a significant impact on the growth potential of the community and would impede progress as expected in the GMS and current Official Plan. Because of the preceding information the "Do Nothing" alternative is not a recommended solution and will not be considered further.

11.1.2 Alternative 2 – Limit Growth

Limiting community growth would reduce or eliminate some of the projected storage deficits, however limiting growth would not address the existing concerns regarding contingency for water storage. Additionally, this alternative was contrary to the development objectives of the GMS and current Official Plan and is similar to the "Do Nothing" alternative. Because of the preceding information this alternative is not recommended and will not be evaluated further.

11.1.3 Alternative 3 – Increase Water Conservation

Water conservation and efficiency may assist in reducing projected water storage deficits but would not address all existing concerns. Conservation may aid in reducing equalization and emergency storage volume requirements.

Relying on water conservation and efficiency alone would not significantly address projected growth demands and the need for additional storage volume, therefore, this alternative is not recommended as a solution on its own and will not be evaluated further. Aspects of this solution are relevant to general sustainability goals/measures and are recommended to be incorporated into the preferred solution.

11.1.4 Alternative 4 – Add Additional Water Storage Tank at New Location and Retain Existing Standpipe

This alternative considers construction of a new water storage solution to support the existing standpipe's capacity and add more water storage volume. This alternative would provide the Township not only with more storage capacity but would also create redundancy for emergencies and general storage purposes.

Preliminary screening of this alternative against the evaluation criteria indicated that it was feasible and therefore was added to the list of alternatives to be reviewed and evaluated in detail. This alternative, however, requires further investigation overall and a project specific Schedule B Class EA.

11.1.5 Alternative 5 – Build New Water Reservoir at New Site and Decommission Existing Water Storage Tank

Alternative 5 proposes that the Township build a new water reservoir at a new site to provide more water storage with a modular approach to allow for phased growth. Additionally, by following this alternative the existing standpipe by the Township Municipal Office could be decommissioned. Although this alternative addresses the problem and opportunity statement

it would come with significant cost, and since the standpipe was constructed fairly recently, it would not make effective use of existing infrastructure. Ultimately this alternative is not recommended and will not be investigated further.

11.2 Pre-Screening

Based on the screening above, the following alternatives did not meet the Problem and Opportunity Statement, or were not feasible against the evaluation criteria and were not considered further:

- Alternative 1 – Do Nothing
- Alternative 2 – Limit Community Growth
- Alternative 3 – Increase Water Conservation
- Alternative 5 – Build New Water Reservoir at New Site and Decommission Existing Water Storage Tank

Alternative 4 was determined to be the only feasible solution and was evaluated further.

11.2.1 Alternative 4 – Add Additional Water Storage at New Location and Retain Existing Standpipe

Alternative 4 is the recommended alternative for the water storage system. This alternative proposes that the township find a new site for additional water storage. This solution creates a positive redundancy to the storage system and adequately meets the problem and opportunity statement. Further investigations will be needed to select the location for the additional storage facility. Investigations into the cultural heritage value and archaeological value of the chosen site will need to be done along with an investigation into the environmental conditions to provide minimal to non-existent impact. In addition to this, the chosen site may cause aesthetic impacts to the surrounding properties and moderate social impact to nearby neighbours during construction.

The top water level elevation of the existing standpipe (278 m) is insufficient to provide water pressures to some topographical areas within Millbrook and utilizes an associated booster pumping station. Therefore, new storage must have an appropriate Hydraulic Grade Line (HGL) to provide sufficient pressures/flows or an associated booster pumping station.

11.3 Detailed Evaluation of Alternatives

The legend for evaluation criteria (**Table 11.2**) is the same as the one used in **Section 8.3**

Table 11.3 details the detailed evaluation of the listed alternatives in **Section 11.2**, compared to Alternative 1 – Do Nothing. Alternative 1 is included in the detailed evaluation as a baseline, despite being screened out previously. The evaluation is further expanded upon with descriptions of the preferred solutions in **Section 12.0** and recommended next steps in **Section** Error! Reference source not found..

Table 11.2: Legend for Evaluation Criteria

Least Positive/Most Negative	More Negative Than Positive	Moderate	More Positive Than Negative	Most Positive/Least Negative
				

Table 11.3: Detailed Evaluation of Water Storage Alternatives

Evaluation Criteria	Alternative 1 Do Nothing	Rating	Alternative 4 Add Additional Storage at New Location	Rating
Social	• Would not support planned future growth and provincial mandate. • Would not require property acquisition and would not impact surrounding land uses.		• Would require land acquisition. • Aesthetic impacts to surrounding properties. • Moderate impacts to nearby neighbours during construction.	
Technical	• Capacity would be constrained to 2,115 m3/day. • Still Requires operation and maintenance.		• Different water storage types can be evaluated (standpipe, elevated tank, etc.) • Possible modifications to existing water supply and booster pumping station. • New property to consider spatial requirements and constraints.	
Cultural	• No construction and therefore no impacts to cultural or archaeological resources.		• Unknown archaeological and cultural conditions until site is selected. Cultural investigations may be required.	
Natural Environment	• Would not require construction; therefore, no anticipated impacts		• Unknown environmental impacts until site is selected. Investigation may be required.	
Financial	**$ $**		**$ $ $**	
Summary	Not Recommended		Recommended Alternative	

12.0 Preferred Solutions

This section outlines the preferred solutions based on the alternatives that were determined to be feasible in **Section 8.3**, **Section 9.2**, **Section 9.4**, **Section 10.3** and **Section 11.3**. The solutions are presented as the preferred solutions with broad details on how these solutions are recommended to be implemented as well as what future assessments and investigations will need to occur to complete the future, project specific Class EA.

12.1 Preferred Wastewater Treatment Alternative

The preferred solution for the Wastewater Treatment system is Alternative 4, expanding the existing wastewater treatment plant. The intention of this solution is to expand the facility within the property boundaries of the existing wastewater treatment plant. This would provide an upgrade to increase the service capacity to meet the expected population in 2051. It is additionally recommended that aspects of Alternative 3 - Reduce Inflow and Infiltration are incorporated to this solution to comply with general sustainability goals.

The Township will be required to take some next steps to confirm that this alternative is viable. First, an assimilative capacity study (ACS) would be required to confirm the effluent discharge capacity of Baxter Creek and confirm that this capacity would support the forecasted future growth. Second, additional environmental investigations, archeological and cultural heritage investigations would need to occur on the existing site to confirm conditions and determine how/where the facility could be expanded. Ultimately, these investigations would comprise and fulfill the requirements of a Schedule C Class EA, which would confirm the preferred solution, treatment strategy and the proposed footprint of the expanded wastewater treatment plant. **Figure 12.1** below shows an aerial map of the existing WWTP and the site boundaries. The WWTP can expand within these existing boundaries.



Figure 12.1: Aerial Map of Existing Wastewater Treatment Plant Boundary

12.2 Preferred Wastewater Collection and Conveyance Alternative

The preferred solutions for Wastewater Collection and Conveyance in the Township were split between the North and South catchments of the Future Settlement Area Boundary. Because of this, two separate preferred solutions were recommended for Wastewater Collection and Conveyance.

- **North Catchment: Alternative 3 – Construct New SPS and Convey to East Sewer Shed** proposes construction of a new SPS in the North Catchment area. This SPS will convey pressurized wastewater along an existing sewer route on the east side of County Road 10, until it meets the gravity sewer, where it will be conveyed by gravity to the WWTP. This solution will additionally require the replacement of a section of forcemain near the WWTP to avoid surcharging in the system. The construction of the new SPS and forcemain will require a Schedule B Class EA or an ASP prior to implementation. If the project successfully passes the ASP, then the construction of the new SPS will be exempt from the Class EA

process, but if it does not it will remain a Schedule B project. Additionally, this solution will require a Schedule B Class EA for the replacement of the section of force main.

- **South Catchment: Alternative 2 – Upgrade Existing SPS for the South Catchment** proposes that the existing Tupper Street SPS is upgraded to adequately service the expected additional population. This solution would, as per the Municipal Class EA requirements, be exempt from the Class EA process.

12.3 Preferred Water Supply Alternative

Two solutions were preferred for the Water supply system in the Township. They are Alternative 4, expanding the existing groundwater well supply and/or Alternative 5, finding additional groundwater well supply.

- **Alternative 4 – Expanding the Existing Groundwater Well Supply** proposes conducting further hydrogeological investigation on the existing groundwater well supply and determining if the existing well field could supply some or all of the additional forecasted water demand to achieve a total required supply of 6,214 m^3 by 2051. This solution also proposes that the increase in water supply will occur in a staged fashion to scale with the impending growth in the Township. To fully determine if this alternative is viable, the Township will need to conduct additional investigations on the existing well (hydrogeological, environmental, archaeological, and cultural heritage assessments, etc.), fulfilling a Schedule B Class EA or at least an ASP to see if it qualifies to be exempt from the Class EA process.
- **Alternative 5 – Finding Additional Groundwater Well Supply** proposes assessing other potential well sites in the area to determine which ones could be viable to bolster water supply from the existing well site. This solution additionally proposes integrating the new well sites in a staged fashion to scale the water supply with growth. To fully determine if this alternative is viable the Township will need to conduct additional hydrogeological investigations on potential well sites to confirm water quality and quantity as well as determine if construction could occur on those sites. These investigations (natural environmental, archaeological, and cultural heritage assessment, hydrogeological, etc.) will be critical to the future project specific Schedule B Class EA.

It is additionally recommended that aspects of Alternative 3 - Reduce Water Demands by Water Conservation and Efficiency are incorporated to either or both of these solutions to comply with general sustainability goals.

Figure 12.2 below is an aerial map showing the existing well site on King Street in Millbrook.



Figure 12.2: Aerial Map of Existing Well Site

12.4 Preferred Water Storage and Distribution Alternative

The preferred solution for water storage is Alternative 4, providing additional water storage at a new location. The intention of this solution is increasing the existing water storage volume by way of providing another water storage tank at a to-be-determined location (within the Future Settlement Area Boundary). This solution will expand the water storage in the Township from 2,115 m^3 to 4,912 m^3. It is additionally recommended that aspects of Alternative 3 - Increase Water Conservation are incorporated to this solution to comply with general sustainability goals.

To confirm the details of this alternative, the Township will undergo a future Schedule B Class EA. This process will include additional natural environmental assessment, archaeological and cultural heritage investigations to determine a preferred site for the future water storage, the type of water storage tank and a desired useable volume to meet the needs of the Millbrook area. **Figure 12.3** below shows the location of the existing Water Storage Tank on Tupper Street, by the Township Municipal Office, in Millbrook.

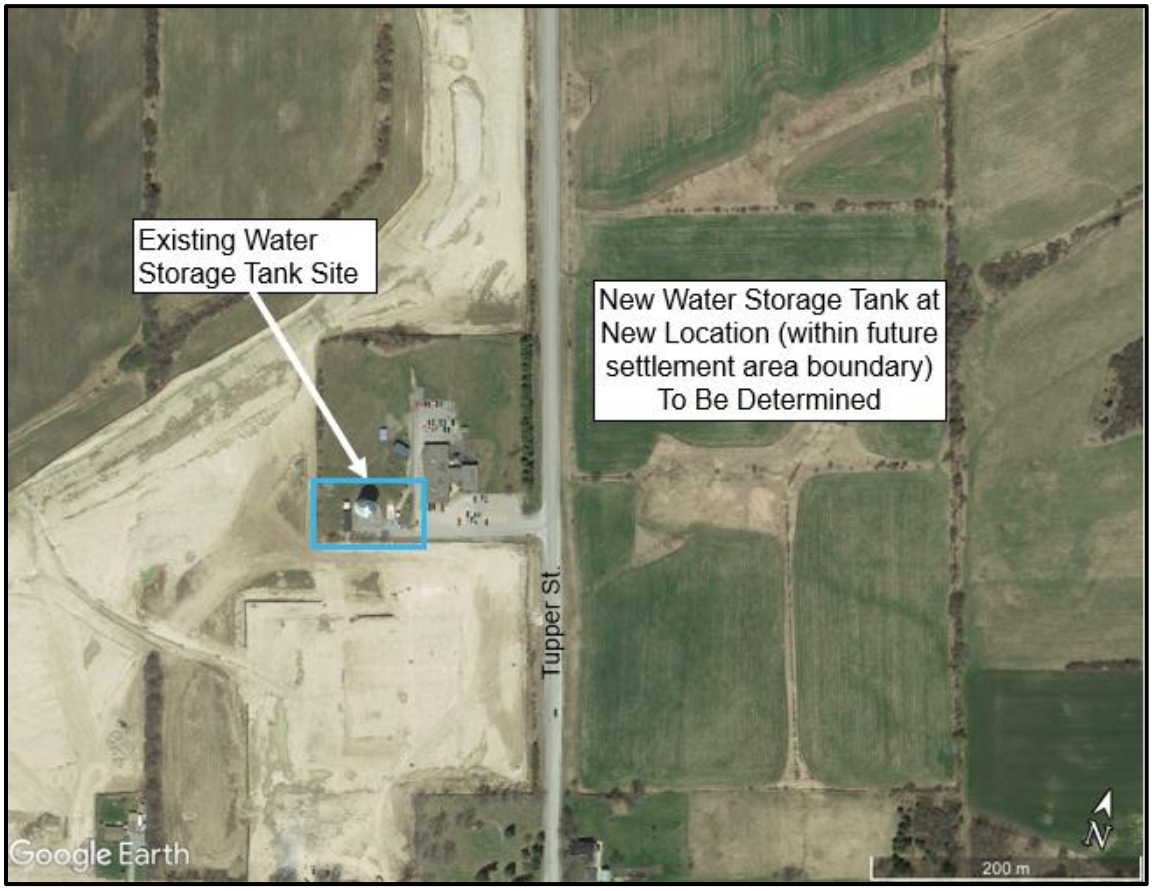


Figure 12.3: Aerial Map of Existing Water Storage Tank Location

The Millbrook Booster Pumping Station (BPS) will need to increase its rated capacity to suit the timing of the developments near the existing standpipe, since the existing standpipe will not provide adequate pressure to these higher-pressure zone developments. As discussed in **Section 11.0**, the capacity increase activities can be completed within the existing Millbrook BPS building. Therefore, it is exempt from the Class EA process, as per 2023 Class EA amendment and does not need to have its alternatives identified and evaluated.

13.0 Consultation and Engagement

13.1 Contact List of Interested and Affected Parties

The project contact list is included in **Appendix 6-1** and includes members of the public, agencies, stakeholders, and Indigenous Communities.

13.2 Notice of Study Commencement

A "Notice of Study Commencement" was posted on the Township website on November 2nd, 2020, in the Millbrook Times, Peterborough Examiner for two consecutive periods. Additionally, the notice was also mailed to a those on the project contact list, including Indigenous Communities. The notice advised that the Class EA for this project was commencing and that any questions or comments on this project should be submitted to the Township or RVA through the contact information provided on the notice.

Copies of the notice and advertisements are provided in **Appendix 6-2**. **Section 13.4** of this report includes a summary of comments and input received as well as the responses that were sent back. **Appendix 6-4** includes the correspondence in full. For privacy reasons, all personal and identifying information has been redacted across all reporting of correspondence.

13.3 Public Information Centre (PIC)

On June 1st, 2023, a Notice of Public Information Centre (PIC) was sent out to the project contact list, including Indigenous Communities, indicating that a PIC was planned to provide further information to the public on this MSS, and to receive input and comments from interested parties. A Notice of PIC was published in Millbrook Times and Peterborough Examiner on two consecutive posting periods. The notice was also posted on the Township website. Copies of the notices and newspaper advertisements are provided in **Appendix 6-2**.

The PIC was held on Wednesday, June 21st, 2023, from 4:00-6:00 p.m. at the Township of Cavan Monaghan Municipal Office. At this PIC, representatives of RVA and the Township presented; the problem/opportunity statement, list of alternative solutions for each infrastructure need, and evaluation criteria that was used and preferred solutions. A copy of the displayed materials is included in **Appendix 6-3**. At the PIC meeting comments were collected from interested parties who attended.

Staff from the Township and members of the consulting team were available to answer questions at the PIC. Eight (8) members of the public signed the PIC attendance form. The PIC display boards were also posted on the Township's website for further review and accessibility of information to interested parties who could not attend in person. **Appendix 6-4** contains all correspondence related to the PIC in full.

13.4 Comments and Input Received

A number of comments were received from interested individuals who either attended the PIC or responded to the notices of commencement and PIC. General concerns and responses are summarised below. All correspondence is included in full in **Appendix 6-4**. For privacy reasons all personal, identifying information has been redacted.

Comment Summary: Interested parties had concerns about groundwater conditions and how groundwater would be protected in the future.

Response: As per the Public Information Centre (PIC) on June 21st, 2023, a future hydrogeological invesigation will be completed to confirm water quantity, quality and to confirm supply for future capacity. The hydrogeological investigation will consider impacts to nearby wells. Upon completion, the hydrogeological report may answer this question. Studies regarding water supply are ongoing. Un-fesasible solutions will require re-assessment of water supply alternatives. The Township is acting in good faith and using the Master Servicing Study process to identify possible water supply solutions. Decisions may need to be refined to limit negative impacts.

Comment Summary: Interested parties had concerns about tetrachloroethylene (also called perchloroethylene or PCE) contamination within the Infrastructure Ontario lands where the Millbrook Correctional Facility used to be located.

Response: A report studying the groundwater on the Millbrook Correctional Facility lands was completed by GHD and published in 2022. As per the findings of the report, PCE concentrations were sampled in multiple locations and multiple layers of the aquifer and was either "not detected or [PCE] was detected at concentrations less than the applicable 2011 Table 2 Generic Standard of 1.6 micrograms per litre [µg/L]" during summer 2021 to winter 2022, (GHD, 2022).

Comment Summary: Interested parties had concerns about how climate change and climate change related conditions would affect the study and be factored into solutions.

Response: As per the Public Information Centre (PIC) which occurred on June 21st, 2023, further natural environment investigations will occur to confirm conditions for servicing upgrades in the Township of Cavan Monaghan. Upon completion, these reports may answer these questions. Regarding climate change, shortlisted alternatives in the MSS were be evaluated using several evaluation criteria, including environmental criterion, where climate change is a key factor.

Comment Summary: Interested parties inquired on the involvement of local Indigenous Communities on planning related to this MSS.

Response: Indigenous Communities were included on the project contact list and received the Notice of PIC via email on June 5th, 2023. Some responses were received to revise contact information, which was completed as asked. Additionally, the Algonquins of Ontario Consultation Office responded indicating that this MSS project did not take place within the Unceded Algonquins of Ontario Settlement Area and thus were removed from future correspondence. Unless requested to be removed from the project contact list, the Township has the contacts to include in future Class Environmental Assessments (EA) related to servicing expansion. The future Class EAs shall include Indigenous Community engagement, as required by the Class EA amendment (2023).

13.5 Engagement with Indigenous Communities

Indigenous Communities were contacted throughout the study and provided with a copy of the Notice of Commencement, Notice of PIC, and Notice of Completion. Copies of communications are appended. In addition to circulating notices, a project update letter and copy of the draft Stage 1 Archaeological Assessment report was provided and Indigenous Communities were invited to provide comments prior to filing the report with the Ministry of Citizenship and Multiculturalism (MCM).

Hiawatha First Nation (HFN) responded to the project update letter and indicated that HFN did not have any concerns at this time. Alderville First Nation (AFN) responded to the project update letter and requested a meeting and Notice of Request to Consult, which was provided. The Township has committed to continued engagement with AFN on future studies and projects resulting from the MSS following completion of the MSS.

13.6 Notice of Completion

The Notice of Completion was published on the Township website, in the Millbrook Times and Peterborough Examiner on Friday, March 1st, 2024. A notice was also sent out to those on the project contact list informing that a finalized version of this report was posted on the Township's website for a 30-day review period.

Copies of the notice and advertisement are included in **Appendix 6-2**.

14.0 Future Studies, Phasing, and Implementation

14.1 Future Studies and Class EA Requirements

As described in **Section 1.0**, this MSS was completed following Approach #1 of the Municipal Class EA Process framework and included a high-level of study to plan future water and wastewater infrastructure to service growth to 2051.

As the Water and Wastewater MSS was completed as a high-level infrastructure planning document, many of the projects identified through the MSS are subject to additional studies and investigations before proceeding to implementation. These additional studies and investigations are required to fulfill regulatory requirements, such as the *Ontario Environmental Assessment Act*, *Water Resources Act*, and *Environmental Protection Act*.

Table 14.1 outlines any future Municipal Class EA requirements that would need to be fulfilled prior to proceeding to implementation; this includes projects that are exempt from the Class EA process, require an Archaeological Screening Process (ASP), or require fulfilling a Schedule B or C Class EA process.

Projects that are exempt from the Class EA process (based on the 2023 Class EA amendment) may proceed directly to design and construction upon completion of the MSS, provided that permitting and approvals requirements are fulfilled.

Projects which qualify to be assessed by an Archaeological Screen Process (ASP) may complete the ASP process to determine if they are exempt from the Class EA process. If after completing the ASP process, it is confirmed that the project is exempt, the project can move forward to the design and construction phases without the need for further Class EA's.

All projects that fall under the Schedule 'B' will be required to complete Phase 2 of the Class EA process before they can continue into the design and construction phase. All projects that fall under Schedule C will be required to complete Phases 2 and 3 as well as Phase 4; once these phases are completed, all Schedule C projects can move forward into the design and construction phases.

Table 14.1: Class EA Requirements for Preferred Solutions

Service	Preferred Solution	Class EA Requirements
Water Supply	Alternative 4 – Expand Existing Groundwater Well Supply and/or Alternative 5 – Find Additional Groundwater Well Supply Investigate existing well field and/or construct new well field in the area to increase capacity from 3,000 m^3/day to 6,214 m^3/day. Expansion would be designed in a staged fashion to meet future growth.	Future investigation, including hydrogeological investigation, required to identify feasibility of expanding existing wells and treatment, and to identify additional possible well sites if required to meet future water demands. Project must fulfill either a Schedule B Class EA or ASP prior to proceeding to implementation. Additional investigations that may be required to fulfill future Class EA, permitting, or approvals requirements may include detailed investigations into the environmental, hydrogeological, archaeological, and cultural heritage conditions of the existing and/or potential well sites.
Water Storage	Alternative 4 – Add Additional Water Storage at a New Location Determine new site location and type of water storage solution to increase storage capacity from 2,115 m^3 to 4,912 m^3. The existing water storage standpipe would be retained.	Location, size, and storage type to be determined by a future study. This future study will also review and identify other water distribution infrastructure needs such as additional pumping facilities or watermain upgrades. Project must fulfill either a Schedule B Class EA or ASP prior to proceeding to implementation. Additional investigations that may be required to fulfill future Class EA,

Service	Preferred Solution	Class EA Requirements
		permitting, or approvals requirements may include detailed investigations into the environmental, archaeological, and cultural heritage conditions of the proposed site.
Millbrook Booster Pumping Station	Increase capacity through new or replacement of equipment within existing building structure.	No further Class EA requirements must be fulfilled, and project can proceed to implementation following the MSS.
Wastewater Treatment	Alternative 4 – Expand Existing Water Treatment Plant Review existing treatment process and identify expansion requirements to meet future capacity needs. Confirm if the existing site can accommodate expansion within the current Township property.	Further investigation required to review and confirm WWTP expansion approach and footprint requirements. Project must fulfill Schedule C Class EA requirements proceeding to implementation. Additional investigations that may be required to fulfill future Class EA, permitting, or approvals requirements may include detailed investigations into the environmental, archaeological, and cultural heritage conditions as well as assimilative capacity study of the receiving water.
Wastewater Collection and Conveyance		
South Catchment	Alternative 2 – Upgrade Existing SPS for South Catchment Upgrade existing Tupper St. SPS. Assumes that new equipment and upgrades would be within the existing building and that no new	No further Class EA requirements must be fulfilled, and project can proceed to implementation following the MSS.

Service	Preferred Solution	Class EA Requirements
	structures would be constructed on the existing property.	
North Catchment	Alternative 3 – Construct New SPS and Convey to East Sewer Shed Further investigations required to determine location, capacity, and specifications for a new SPS and to determine the route and size of new forcemain(s) for the new SPS. This assumes watercourse crossings, if required, would be completed using trenchless technologies.	Project must fulfill either a Schedule B Class EA or ASP prior to proceeding to implementation. Additional investigations that may be required to fulfill future Class EA, permitting, or approvals requirements may include detailed investigations into the environmental, archaeological, and cultural heritage conditions of the proposed site.

14.2 Schedule, Phasing, and Implementation Plan

The goal of this MSS is to provide a vision and recommended alternatives towards the water and wastewater servicing infrastructure needs for the immediate and long-term growth of the Township of Cavan Monaghan and more specifically the Millbrook Urban Settlement Area.

The 30-year planning horizon was determined to provide an adequate timeline for the anticipated growth within the Millbrook Urban Settlement Area and identify the system/facility upgrades and improvements that would need to occur to support the anticipated population growth. Despite this planning horizon, exact timing of development is uncertain. These projects will be influenced by many factors including realized community growth, council approval and progression on the proposed Municipal Class EA processes that will need to be completed prior to detail design and construction. **Table 14.2** below shows a proposed schedule for implementation of the proposed infrastructure upgrades. The exact dates and timeline are subject to change based on the previously noted factors. High-level cost estimates are also provided in the table.

The approximate capital cost estimates were developed to support general budgeting purposes and are aligned with the definition of a Class 'D' (indicative) level estimate. The MSS estimates include a 50% contingency and are based on an accuracy level of -50% to +50%.

In the future, the estimates will be refined as each respective project is further developed and progressed toward implementation, and may vary from those in this MSS.

Table 14.2: Summary of Projects and Phasing

#	Project	Timeline	Approximate Cost Estimate	Additional Class EA Requirements
1	New Water Storage	Short Term	~$10 million	Schedule B Class EA or ASP
2	Increase capacity of existing Millbrook Booster Pumping Station	Short Term	~$1 million	N/A
3	Water Supply Expansion	Medium Term	~$7 million	Schedule B Class EA or ASP
4	Wastewater Treatment Plant Expansion	Medium Term	~$20 million	Schedule C Class EA
5	Wastewater Conveyance Solutions			
5a	Tupper St. SPS Upgrades	Short Term	~$2.5 million	N/A
5b	New SPS	Long Term	~$9 million	Schedule B Class EA or ASP
5c	Sanitary Sewer Upgrades	Long Term	~$1 million	N/A

15.0 References

Archaeological Services Inc. (ASI). (2021). *Cultural Heritage Report: Desktop Collection Results.* Toronto: Archaeological Services Inc. (ASI).

Archaeological Services Inc. (ASI). (2021). *Stage 1 Archaeological Assessment Cavan Monaghan Water and Wastewater Master Servicing Study.* Toronto: Archaeological Services Inc. (ASI).

GHD. (2022). *2021-2022 Groundwater Monitoring Report, N00596 Former Millbrook Correctional Centre, 706 County Road 21, Millbrook, Ontario.* Infrastructure Ontario.

Municipal Engineers Association. (2023). *Municipal Class Environmental Assessment.* Municipal Engineers Association.

R.V. Anderson Associates Limited. (2022). *Township of Cavan Monaghan Water and Wastewater Master Servicing Study Technical Memorandum #1 - Population and Flows.* Toronto: R.V. Anderson Associates Limited.

Thurber Engineering Limited. (2023). *Technical Memorandum Desktop Hydrogeological Study Water and Wastewater Servicing Study Township of Cavan Monaghan, Ontario.* Oakville: Thurber Engineering Limited.

Township of Cavan Monaghan. (2018). *Municipal Servicing Standards.*

Watson & Associates Economists Limited. (2022). *Growth Management Strategy Final Addendum Report, 2022.* Watson & Associates Economists Limited.

APPENDIX 1

POPULATION, WATER DEMAND, WASTEWATER FLOW PROJECTION REVIEW



APPENDIX 1-1

Technical Memorandum #1: Population and Flows (TM1)

APPENDIX 1-2

Watson & Associates Economists Ltd. Growth Management Strategy Final Addendum Report, 2022

APPENDIX 2

HYDROGEOLOGICAL REPORT, THURBER ENGINEERING



APPENDIX 3

NATURAL HERITAGE MAPS



APPENDIX 3-1

Natural Heritage Map – Millbrook Area, MNRF

APPENDIX 3-2

Natural Heritage System Map, County of Peterborough

APPENDIX 4

ARCHAEOLOGICAL ASSESSMENT, ASI



APPENDIX 5

CULTURAL HERITAGE ASSESSMENT, ASI



APPENDIX 6

COMMUNICATION RECORDS & CONSULTATION



APPENDIX 6-1

List of Stakeholders

APPENDIX 6-2

Notices of Project Commencement, PIC, and Conclusion

APPENDIX 6-3

PIC Materials

APPENDIX 6-4

Comments and Correspondence

APPENDIX 7

WASTEWATER CONVEYANCE MODELLING RESULTS



APPENDIX 1

POPULATION, WATER DEMAND, WASTEWATER FLOW PROJECTION REVIEW



APPENDIX 1-1

Technical Memorandum #1: Population and Flows (TM1)

Township of Cavan Monaghan Water and Wastewater Master Servicing Study

Technical Memorandum #1 – Population and Flows
FINAL

Prepared for:
The Township of Cavan Monaghan

This Technical Memorandum is protected by copyright and was prepared by R.V. Anderson Associates Limited for the account of the Township of Cavan Monaghan. It shall not be copied without permission. The material in it reflects our best judgment in light of the information available to R.V. Anderson Associates Limited at the time of preparation. Any use which a third party makes of this Technical Memorandum, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. R.V. Anderson Associates Limited accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this Technical Memorandum.

RVA 205371

December 16, 2022

R.V. Anderson Associates Limited
2001 Sheppard Avenue East Suite 300
Toronto Ontario M2J 4Z8 Canada
Tel 416 497 8600 Fax 855 833 4022
www.rvanderson.com

December 16, 2022 RVA 205371

Township of Cavan Monaghan
988 County Road 10
Millbrook, ON
L0A 1G0

Attention: Wayne Hancock, P.Eng.

Dear Mr. Hancock,

Re: Township of Cavan Monaghan Water and Wastewater Master Servicing Study
Technical Memorandum #1 – Population and Flows FINAL

We are pleased to provide the enclosed Technical Memorandum #1 – Population and Flows for the Township of Cavan Monaghan Water and Wastewater Master Servicing Study.

Please do not hesitate to contact the undersigned if you have any questions.

Yours very truly,

RV ANDERSON ASSOCIATES LIMITED

Dania Chehab, P.Eng.
Project Manager

CANADA'S BEST MANAGED COMPANIES
Platinum member

Township of Cavan Monaghan Water and Wastewater Master Servicing Study

Technical Memorandum #1 – Population and Flows

TABLE OF CONTENTS

TABLE OF CONTENTS I

LIST OF FIGURES II

LIST OF TABLES II

LIST OF APPENDICES II

1.0 INTRODUCTION 1

2.0 LAND USE PLANNING PROJECTIONS 1

3.0 POPULATION GROWTH AND EMPLOYMENT ESTIMATES 4

3.1 Township of Cavan Monaghan 4
3.2 Millbrook Urban Settlement Area 5

3.2.1 Existing Population 5
3.2.2 Long-Term Forecasted Population Growth 6

4.0 WASTEWATER SERVICING 6

4.1 Existing Wastewater Generation Rates 7
4.2 Projected Long-Term Wastewater Generation Rates 8

5.0 WATER SERVICING 11

5.1 Existing Water Demands 11
5.2 Projected Long-Term Water Demands 12
5.3 Long-Term Fire Flow Requirements 15
5.4 Long-Term Water Storage Requirements 16

6.0 SUMMARY 19

7.0 REFERENCES 20

LIST OF FIGURES

Figure 2.1 - Land Uses in the Township of Cavan Monaghan (Sourced from the Official Plan, Amended October 2021) 2
Figure 2.2 - Land Uses in the Millbrook Urban Settlement Area (Sourced from the Official Plan, Amended October 2021) 3
Figure 4.1 - Wastewater ADF Projections 10
Figure 4.2 - Wastewater MDF Projections 10
Figure 5.1 - Water MDF Projections 15
Figure 5.2 - Required Water Storage Projections 18

LIST OF TABLES

Table 3.1 - Township Population Estimates & Forecasts from 2021-2051 4
Table 3.2 - Township Employment Estimates & Forecasts from 2021-2051 5
Table 3.3 - Millbrook Total Long-Term Population and Employee Estimates 6
Table 4.1 - Existing Wastewater Flows 7
Table 4.2 - Estimated Residential Per Capita Flowrates 7
Table 4.3 - Parameters/Values used for long-term wastewater forecast 8
Table 4.4 - Long-Term Wastewater Flows 9
Table 5.1 - Existing Water Demands 11
Table 5.2 - Estimated Residential Per Capita Water Demands 12
Table 5.3 - Parameters/Values used for long-term water forecast 12
Table 5.4 - Long-Term Water Demands 14
Table 5.5 - Design Guidelines for Drinking-Water Systems Fire Flow Requirements 15
Table 5.6 - Present and Long-Term Fire Flow Requirements 16
Table 5.7 - Millbrook Standpipe Details 17
Table 5.8 - Water Storage Volume Requirements 17
Table 5.9 - Existing Standpipe Compared to Water Storage Capacity Requirements 18

LIST OF APPENDICES

Appendix A - Email Background Documentation

Appendix B - Wastewater Data

1.0 INTRODUCTION

R.V. Anderson Associates Limited (RVA) was retained by the Township of Cavan Monaghan (TCM) to complete a Master Servicing Study (MSS) for water and wastewater servicing. The project is being completed under the framework of the Municipal Engineers Association Class Environmental Assessment (EA) Process Master Plan Approach #1.This includes formulation of a document at the finish of Phase 1 (identify the problem) and part of Phase 2 (identify alternative and recommended solutions) of the Class EA process. The Master Plan is at a broad level of assessment and identified Schedule B and C projects will require future work to fulfil Municipal Class EA documentation requirements. This MSS considers a 30-year planning horizon, with a baseline of 2021 (to 2051).

The purpose of Technical Memorandum #1 (TM1) is to provide an overview of the expected growth in and around the Millbrook Urban Settlement Area, and the projected population, wastewater flows, and water demands for the 2051 horizon.

2.0 LAND USE PLANNING PROJECTIONS

The Township of Cavan Monaghan is located within the County of Peterborough and is connected to both Highway 401 and recently Highway 407 by Highway 115. **Figure 2.1** below illustrates the various land use designations within the Township.

The Village of Millbrook is identified in TCM's Official Plan to 2031, most recently amended in 2021, as the Primary Urban Settlement Area. As per the Official Plan, development in the Township is primarily directed to the designated urban serviced community of Millbrook. A lesser extent of growth may occur in the un-serviced hamlet areas including Bailieboro, South Monaghan, Fraserville, Springville, Five Mile Turn, Mount Pleasant, Ida and Cavan. The growth in these un-serviced hamlets is contingent on the ability to provide adequate individual on-site sewage and water servicing.

Therefore, the majority of the commercial, residential, institutional, and employment growth and development in the Township is expected to be accommodated in Millbrook. Growth in the Millbrook Urban Settlement Area will represent approximately 70% of the Township's growth as documented in the Official Plan.

The Millbrook Urban Settlement Area is composed of land uses including residential, employment, commercial, institutional, parks and open space, with the majority of land use within Millbrook designated as residential. Additionally, the settlement area contains a Special Development Area where the former Millbrook Correctional Facility was located. **Figure 2.2** below demonstrates the various land uses in the Millbrook Urban Settlement Area.

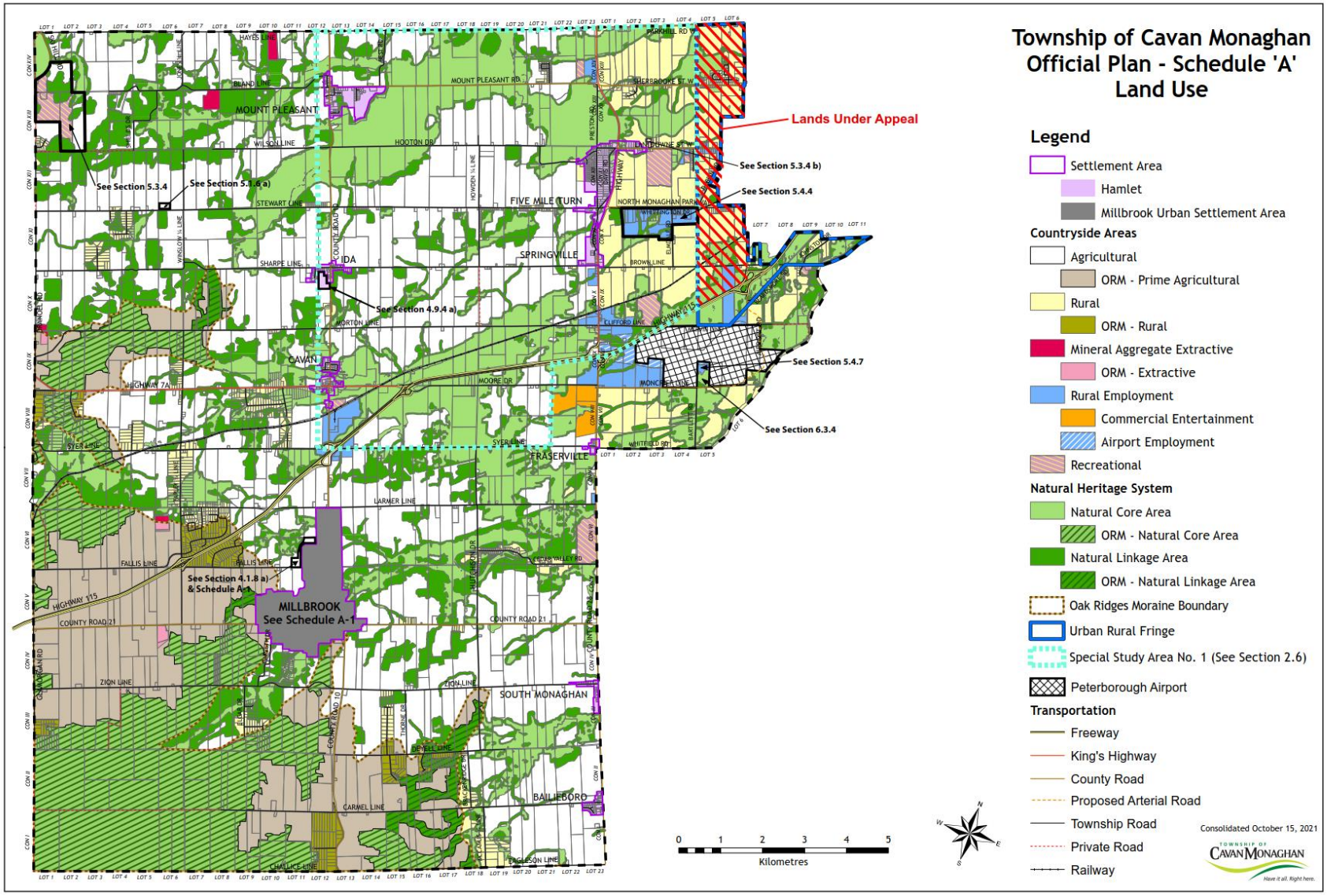


Figure 2.1 - Land Uses in the Township of Cavan Monaghan (Sourced from the Official Plan, Amended October 2021)

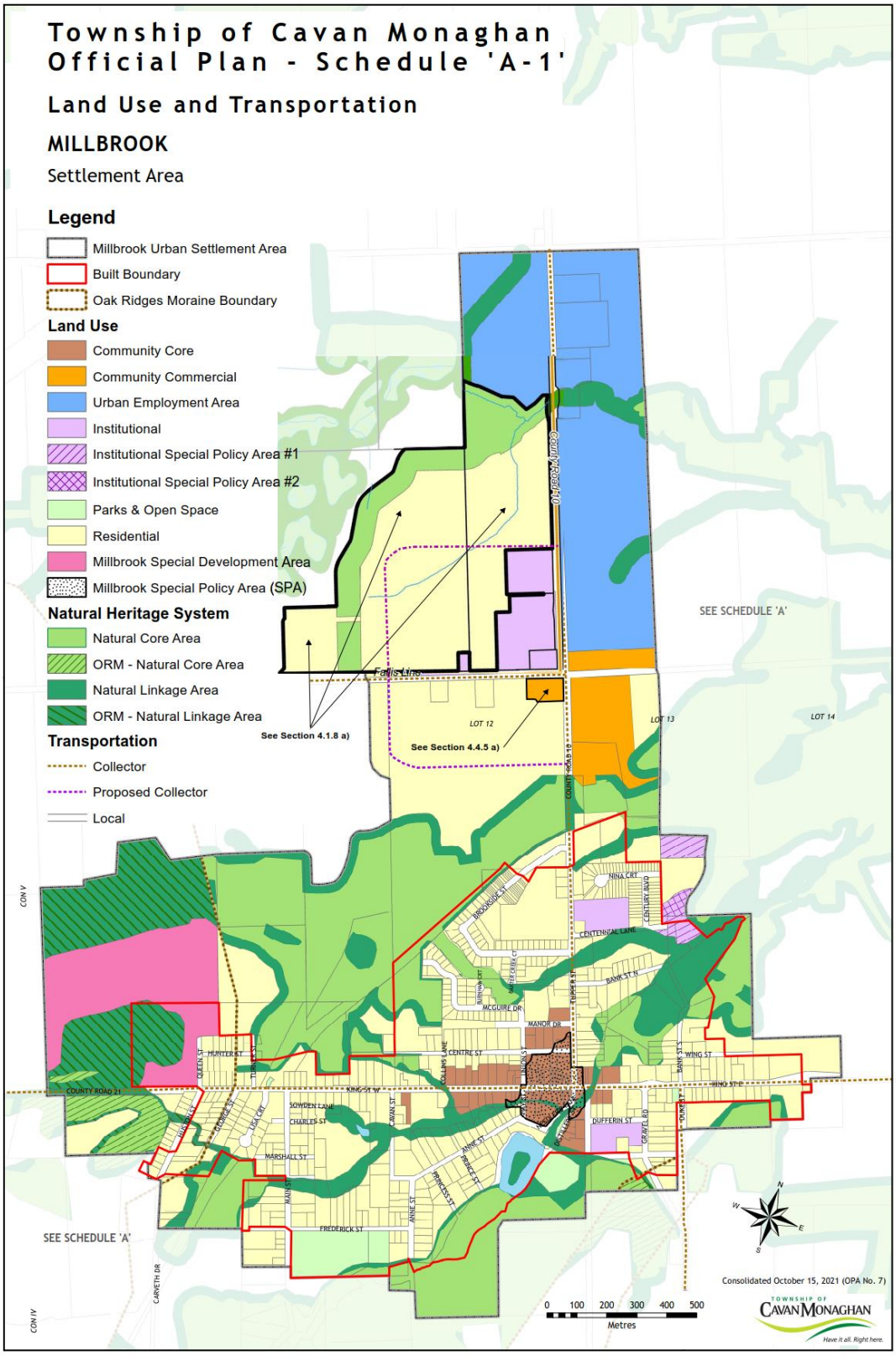


Figure 2.2 - Land Uses in the Millbrook Urban Settlement Area (Sourced from the Official Plan, Amended October 2021)

Watson & Associates Economists Ltd. (Watson) originally completed a Growth Management Strategy (GMS) report in May 2020 for TCM. Subsequent to the initial GMS a second GMS report was published in 2022, titled “Growth Management Strategy Final Addendum Report, 2022”. This report includes information regarding TCM’s growth forecast and urban land needs to the year 2051, it also outlines future expansion of the urban settlement area.

3.0 POPULATION GROWTH AND EMPLOYMENT ESTIMATES

3.1 Township of Cavan Monaghan

Population forecasts have been included in the Township’s Official Plan (2021) as well as the Growth Management Strategy Final Addendum Report (2022) prepared for TCM by Watson. **Table 3.1** below demonstrates the long-term population forecasts for TCM.

Table 3.1 - Township Population Estimates & Forecasts from 2021-2051[1]

Year	Population Forecast	
	Census and Official Plan Information	Growth Management Strategy Report (2022)
2021	10,016 (2021 Census)	10,300
2026	N/A	11,900
2031	11,560 (2021 Official Plan)	13,200
2036	N/A	14,400
2041	N/A	15,500
2046	N/A	16,600
2051	N/A	17,600

Employment forecasts have been included in the Growth Management Strategy (GMS) Report (Watson & Associates Economists Ltd., 2022). **Table 3.2** below demonstrates the long-term employment forecasts for TCM.

[1] Sourced from Watson & Associates Economists Ltd. Growth Management Strategy Final Addendum Report, 2022 dated August 29, 2022

Table 3.2 - Township Employment Estimates & Forecasts from 2021-2051[2]

Year	Employment Forecast
	Growth Management Strategy Report (2022)
2021	3,900
2026	5,000
2031	5,800
2036	6,600
2041	7,200
2046	7,700
2051	8,100

3.2 Millbrook Urban Settlement Area

As noted in the GMS Report, over the 2021 to 2051 period, approximately 94% of TCM's forecast household growth is allocated to Millbrook and 6% is allocated to rural areas[3]. To accommodate the upcoming growth in the Millbrook Urban Settlement Area, the GMS has identified residential growth opportunities through residential intensification within the Millbrook downtown area and development of greenfield lands.

3.2.1 Existing Population

Based on further discussion held between TCM, RVA and Watson, population estimates for the entire Millbrook Settlement Area were provided. As noted over email conversation with Watson, the 2019 Millbrook population base was estimated to be 2,195 persons with 776 private dwellings (2.83 persons per dwelling). The 2021 Millbrook population base was estimated to be 2,558 persons with 880 private dwellings (2.91 persons per dwelling). Note that these estimates include an undercount factor adjustment of 1.0248, which incorporates the difference between the estimated and actual census counts. The Growth Management Report that was prepared by Watson used a baseline year of 2021 for the analysis. Consequently, as a basis for estimating water and wastewater flowrates RVA utilized the 2021 population information as a basis. Email background documentation can be found in **Appendix A**.

Watson also provided baseline employee estimates for Millbrook, noting an estimated 700 jobs in Millbrook in 2019 and 970 jobs in 2021. Email background documentation can be found in **Appendix A**.

[2] Sourced from Watson & Associates Economists Ltd. Growth Management Strategy Final Addendum Report, 2022 dated August 29, 2022
[3] Sourced from Watson & Associates Economists Ltd. Growth Management Strategy Final Addendum Report, 2022 dated August 29, 2022

3.2.2 Long-Term Forecasted Population Growth

As per the GMS Report, over the years 2021 to 2051, the Millbrook Built-Up Area is forecasted to have a net growth of 191 persons and the Millbrook Designated Greenfield Area is forecasted to have a net growth of 7,515 persons[4]. Totaling the net growth in Millbrook (Built-Up Area and Designated Greenfield Area) and including the undercount adjustment results in a total growth of 7,897 persons.

Over the 2021 to 2051 period, employment growth is forecasted to comprise 1,605 employees on Urban Employment Areas and 1,408 on Community Areas, for a total employment growth of 3,013 employees[5].

Table 3.3 presents the total long-term population and employee estimates.

Table 3.3 - Millbrook Total Long-Term Population and Employee Estimates

Year	Total Residential Population	Total Employees
2021	2,558	970
2051	10,455	3,983

4.0 WASTEWATER SERVICING

The Millbrook Wastewater Treatment Plant (WWTP) located on Centennial Lane, near the Tupper Street / King Street East downtown area of Millbrook treats wastewater generated in the serviced Millbrook Urban Settlement Area.

In 2016, the WWTP was upgraded to a rated capacity of 2,521 m^3/day and a peak capacity of 8,242 m^3/day. The WWTP expansion, was originally designed to aid the Township in servicing an additional 1000 residential units from the year 2010 onwards.

Currently, the downtown core and original Millbrook village are serviced by the municipal sanitary sewer system. Flows from this catchment are conveyed by gravity to the Tupper Street Sewage Pumping Station (SPS) and then conveyed by a force main to the WWTP. North of Buckland Drive, sewers are connected from the Towerhill South development where flow is conveyed by gravity directly to the WWTP.

The system is estimated to be currently operating at about a third of its rated capacity and has the capacity to service planned short-term developments, as described below.

[4] Sourced from Watson & Associates Economists Ltd. Growth Management Strategy Final Addendum Report, 2022 dated August 29, 2022
[5] Sourced from Watson & Associates Economists Ltd. Growth Management Strategy Final Addendum Report, 2022 dated August 29, 2022

4.1 Existing Wastewater Generation Rates

The Township of Cavan Monaghan provided data on the influent wastewater received at the WWTP from 2017 to 2021, which is included in **Appendix B**. The information contained the total flow, Average Daily Flow (ADF) and Maximum Daily Flow (MDF) for each month. **Table 4.1** presents a summary of the wastewater flows at the Millbrook WWTP from 2017 to 2021.

Table 4.1 - Existing Wastewater Flows

Year	Average Daily Flow (m^3/day)	Maximum Daily Flow (m^3/day)
2017	775	3,190
2018	722	2,634
2019	796	2,918
2020	836	3,373
2021	881	3,349
Average of 2017-2021	**802**	**3,093**
WWTP Rated Capacity	**2,521**	**8,242**
% of WWTP Rated Capacity Used	**32%**	**38%**

The historical average flows indicate that the facility has installed capacity available for growth in Millbrook.

Per capita flowrates were determined for 2019, 2020, 2021 using the available population data and flow data. Employees were assumed to contribute 1/3 of the flow of a residential person and 50% of Millbrook employees were assumed to live outside Millbrook. **Table 4.2** summarizes the calculation of residential per capita flowrates for each year.

Table 4.2 - Estimated Residential Per Capita Flowrates

Year	Population	Employees	Average Daily Flow (m^3/day)	Residential Per Capita Flowrate (L/[cap*day])
2019	2,195	700	796	334
2020	2,376	835	836	332
2021	2,558	970	881	324

Using the three (3) per capita flowrate data points, the mean of the numbers was calculated to be 334 L/(cap*day).

4.2 Projected Long-Term Wastewater Generation Rates

Table 4.3 summarizes the values used as a basis to estimate the forecasted 2051 wastewater flows.

Table 4.3 - Parameters/Values used for long-term wastewater forecast

Parameter	Value	Source
Net residential population growth (2021 – 2051) (persons)	7,897	GMS Report
Net employment growth (2021 – 2051) (employees)	3,013	GMS Report
Per capita residential wastewater generation rate (L/[cap*day])	334	Derived from historical data
Per capita employment wastewater generation rate (L/[cap*day])	98	(Metcalf & Eddy, 2014)
Residential peaking factor	2.94	(Ontario Ministry of the Environment, 2019), Harmon peaking factor
Employment peaking factor	2.94	(Ontario Ministry of the Environment, 2019), Harmon peaking factor

The employment wastewater generation rate of 98 L/(cap*day) was taken as the high range of the typical wastewater flowrate for an industrial building employee from Metcalf & Eddy, Wastewater Engineering Treatment and Resource Recovery. Note that the calculation of the sewage flow rates for industrial areas is industry/process specific. Accordingly, depending on the function and activity of the Industrial, Commercial and Institutional (ICI) developments that occur over the long-term within Millbrook the per capita employment wastewater generation rates could vary significantly. Additionally, differing industry-to-industry pollutants and chemical constituents in the wastewater such as Biochemical Oxygen Demand (BOD), Total Suspended Solids (TSS), Total Kjeldahl Nitrogen (TKN) and Total Phosphorus (TP) may also vary. Once specific ICI users have been identified, it is recommended that ICI wastewater flows be recalculated.

Furthermore, the employment wastewater generation rate noted in this report assumes that wastewater is generated only by employees working in the employment lands. The calculated wastewater generation does not include the specific industrial wastewater from company operations (i.e., food processing, brewery, restaurants, manufacturing, etc.). At the time of writing this report the future employment industries were not yet confirmed. Once specific ICI users have been identified, the long-term contribution from each employment parcel should be determined. It is also recommended that once ICI developments are built, flow monitoring be conducted.

As noted in the Ministry of the Environment Design Guidelines for Sewage Works, design values for the average domestic wastewater flows typically range from 225 to 450 L/(cap*day). The utilized per capita residential wastewater generation rate of 334 L/(cap*day) falls within this range. The sewage design guidelines further recommend the inclusion of an extraneous flow allowance, for additional contributors such as Inflow and Infiltration (I&I). For the purposes of this report no flow amount was included for I&I as the existing wastewater generate rates already include this component. **Table 4.4** below demonstrates the long-term wastewater generation rates in Millbrook.

Table 4.4 - Long-Term Wastewater Flows

Parameter	Value
Additional Residential Population	
Additional Population (Forecasted from 2021 to 2051)	7,897
Per Capita Flow (m^3/[cap*day])	0.334
Wastewater ADF (m^3/day)	2,638
Total Additional Residential ADF (m^3/day)	**2,638 (A)**
Harmon Peaking Factor	2.94
Wastewater MDF (m^3/day)	7,743
Total Additional Residential MDF (m^3/day)	**7,743 (B)**
Additional Employment Population	
Additional Population (Forecasted from 2021 to 2051)	3,013
Per Capita Flow (m^3/[cap*day])	0.098
Wastewater ADF (m^3/day)	295
Total Additional Employment ADF (m^3/day)	**295 (C)**
Harmon Peaking Factor	2.94
Wastewater MDF (m^3/day)	867
Total Additional Employment MDF (m^3/day)	**867 (D)**
Total Forecasted Flows	
Existing ADF (m^3/day)	802
Additional ADF (m^3/day) (Residential + Employment; A+C)	2,933
Total Forecasted Long-Term ADF (m^3/day)	**3,735**
Existing MDF (m^3/day)	3,093
Additional MDF (m^3/day) (Residential + Employment; B+D)	8,609
Total Forecasted Long-Term MDF (m^3/day)	**11,702**

The long-term forecasted ADF was estimated to be approximately 3,735 m^3/day and the long-term forecasted MDF was estimated to be approximately 11,702 m^3/day. The forecasted long-term ADF is approximately 48% greater than the current WWTP's rated capacity of 2,521 m^3/day and the forecasted long-term MDF is approximately 42% greater than the current WWTP's peak capacity of 8,242 m^3/day. Therefore, additional wastewater treatment capacity, such as expansion of the current WWTP, will be required to accommodate the forecasted long-term growth to 2051. Future analysis will examine flow impacts on pumping station and trunk sewer capacities.

Wastewater flow projections are illustrated on an ADF basis in **Figure 4.1** and on a MDF basis in **Figure 4.2**. Based on flow and growth projections 85% of the WWTP's rated capacity may be exceed by 2033.

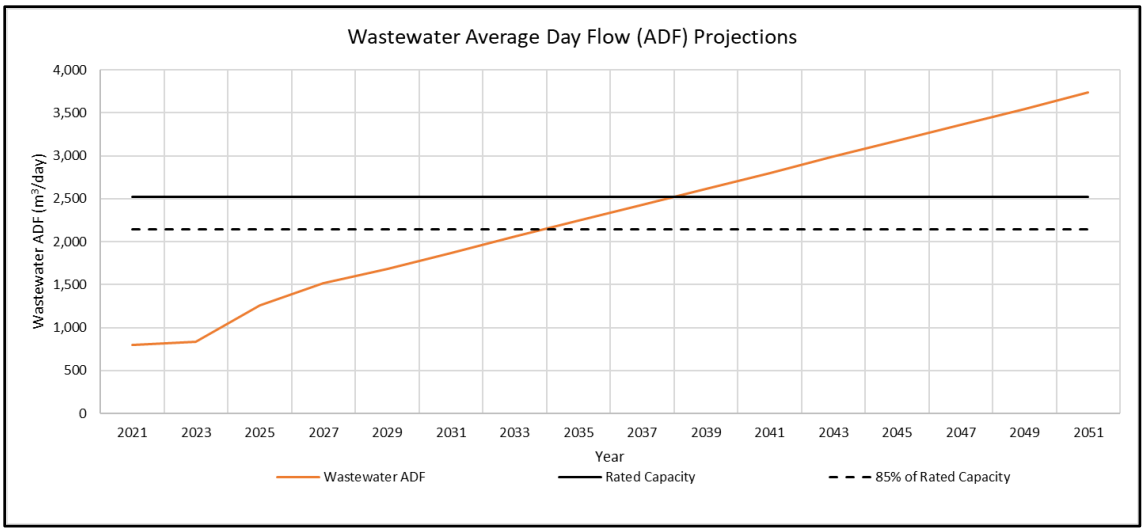


Figure 4.1 - Wastewater ADF Projections

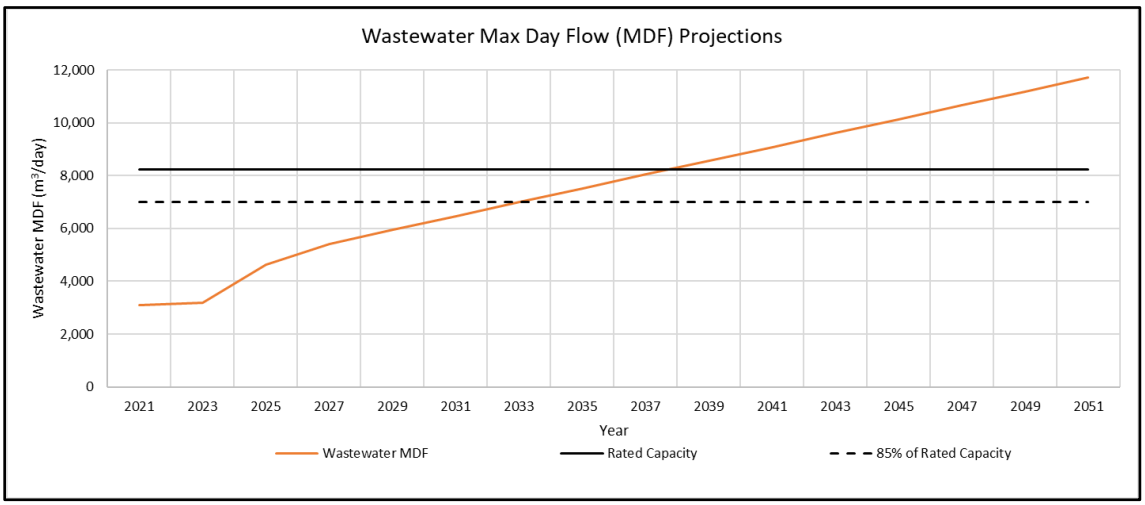


Figure 4.2 - Wastewater MDF Projections

5.0 WATER SERVICING

Millbrook is serviced with drinking water from the Millbrook Water Treatment Plant (WTP), located on King Street West, slightly west of the Millbrook downtown area. The WTP treats water from three (3) groundwater wells and each well pump is rated 1,500 L/min (2,160 m^3/day) @ 64m head. Primary disinfection is achieved through chlorination and the chlorine contact tank. In 2005, the WTP was upgraded with the third of the three (3) wells (Well #3).

The WTP operates under a Municipal Drinking Water License (MDWL) and Drinking Water Works Permit (DWWP) which limits the maximum total daily production of treated water to 3,000 m^3/day. The facilities' Permit-To-Take-Water (PTTW) also limits the total amount of water removal from all wells to 3,000 m^3/day.

5.1 Existing Water Demands

The Township of Cavan Monaghan provided data on the treated water discharge flow at the WTP from 2017 to 2021. The information contained the total treated water flow for each day. **Table 5.1** demonstrates a summary of the water demands observed from 2017 to 2021.

Table 5.1 - Existing Water Demands

Year	Average Daily Flow (m^3/day)	Maximum Daily Flow (m^3/day)
2017	482	997
2018	482	972
2019	552	1,009
2020	541	1,018
2021	689	1,233
Average from 2017-2020	**549**	**1,046**
WTP Rated Capacity	**3,000**	**3,000**
% of WTP Rated Capacity	**18%**	**35%**

The historical flows indicate that the plant has capacity available for additional development in Millbrook. The calculated maximum day factor of 1.9 (MDF to ADF ratio) is similar to the Ontario Ministry of the Environment Design Guidelines for Drinking-Water Systems (2008) domestic water demands (Table 3.1) which notes a typical maximum day factor of 2.25 for a population of 2001-3000 persons.

Per capita flowrates were determined for 2019, 2020, 2021 using the available population data and flow data. Employees were assumed to contribute 1/3 of the flow of

a residential person and 50% of Millbrook employees were assumed to live outside Millbrook. **Table 5.2** summarizes the calculation of residential per capita demands for each year.

Table 5.2 - Estimated Residential Per Capita Water Demands

Year	Population	Employees	Average Daily Flow (m^3/day)	Residential Per Capita Demand (L/[cap*day])
2019	2,195	700	552	239
2020	2,376	835	541	215
2021	2,558	970	689	253

Using the three (3) per capita flowrate data points, the mean of the numbers was calculated to be 236 L/(cap*day). As noted in the Ontario Ministry of the Environment Design Guidelines for Drinking-Water Systems, domestic water demand used in design historically has ranged from 270 to 450 L/(cap*day)[6]. The existing Millbrook per capita values are therefore lower than similar municipalities and the low end of typical design values. For the purposes of this study and for planning future water servicing requirements, a per capita water demand of 270 L/(cap*day) was utilized.

5.2 Projected Long-Term Water Demands

Table 5.3 summarizes the values used as a basis to estimate the forecasted 2051 water demand.

Table 5.3 - Parameters/Values used for long-term water forecast

Parameter	Value	Source
Net residential population growth (2021 – 2051) (persons)	7,897	GMS Report
Net employment growth (2021 – 2051) (employees)	3,013	GMS Report
Per capita residential water demand (L/[cap*day])	270	(Ontario Ministry of the Environment, 2019), Section 3.4.2
Per capita employment water demand (L/[cap*day])	150	(Metcalf & Eddy, 2014)
Residential maximum day factor	2.0	(Ontario Ministry of the Environment, 2019), Table 3-1
Employment maximum day factor	2.0	(Ontario Ministry of the Environment, 2019), Table 3-1

[6] Sourced from Ontario Ministry of the Environment Design Guidelines for Drinking-Water Systems

The employment water demand was taken as the typical per capita commercial water use amount from Metcalf & Eddy, Wastewater Engineering Treatment and Resource Recovery. Note that the calculation of the water flow rates for industrial areas is industry/process specific. Accordingly, depending on the function and activity of the ICI developments that occur over the long-term within Millbrook the per capita employment rates may vary significantly. Once specific ICI users have been identified, it is recommended that ICI water demands are recalculated.

Furthermore, the employment water demand only includes the water usage from the employees working in the employment lands. The calculated water demand does not include the specific industrial company operations (i.e., food processing, brewery, restaurants, manufacturing, etc.). At the time of writing this report the future employment industries were not yet confirmed. Once specific ICI users have been identified, the long-term contribution from each employment parcel should be determined. It is also recommended that once ICI developments are built and water consumption is metered, that the data be reviewed with this forecast and updated as required.

Table 5.4 demonstrates the long-term water demands in Millbrook.

Table 5.4 - Long-Term Water Demands

Parameter	Value
Additional Residential Population	
Additional Population (Forecasted from 2021 to 2051)	7,897
Per Capita Flow (m^3/[cap*day])	0.270
Total Additional Residential ADF (m^3/day)	**2,132 (A)**
Maximum Day Factor	2.0
Total Additional Residential MDF (m^3/day)	**4,264 (B)**
Additional Employment Population	
Additional Population (Forecasted from 2021 to 2051)	3,013
Per Capita Flow (m^3/[cap*day])	0.150
Total Additional Employment ADF (m^3/day)	**452 (C)**
Maximum Day Factor	2.0
Total Additional Employment MDF (m^3/day)	**904 (D)**
Total Forecasted Flows	
Existing ADF (m^3/day)	549
Additional ADF (m^3/day) (A+C)	2,584
Total Forecasted ADF (m^3/day)	**3,133**
Existing MDF (m^3/day)	1,046
Additional MDF (m^3/day) (B+D)	5,168
Total Forecasted MDF (m^3/day)	**6,214**

The long-term forecasted ADF was estimated to be approximately 3,133 m^3/day and the long-term forecasted MDF was estimated to be approximately 6,214 m^3/day. The forecasted MDF is approximately 107% greater than the current WTP's rated capacity of 3,000 m^3/day. Therefore, additional water supply and treatment capacity will be required to meet the needs of the long-term forecasted growth. Future analysis will examine flow impacts on pumping station and watermain capacities.

Water flow projections are illustrated on a MDF basis in **Figure 5.1**. Based on flow and growth projections 85% of the WTP's rated capacity may be exceed by 2030.

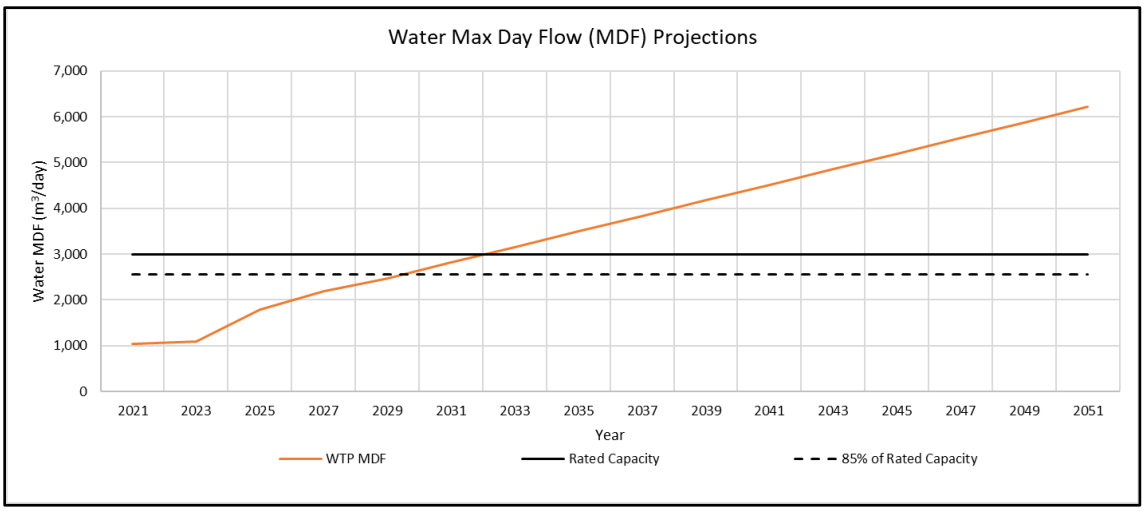


Figure 5.1 - Water MDF Projections

5.3 Long-Term Fire Flow Requirements

The Ontario Ministry of the Environment Design Guidelines for Drinking-Water Systems provides guidance for fire flow design based on population density. An excerpt of Table 8-1: Fire Flow Requirements is shown below in **Table 5.5.**

Table 5.5 - Design Guidelines for Drinking-Water Systems Fire Flow Requirements[7]

Equivalent Population	Suggested Fire Flow (L/s)	Duration (hours)
500 to 1,000	38	2
1,000	64	2
1,500	79	2
2,000	95	2
3,000	110	2
4,000	125	2
5,000	144	2
6,000	159	3
10,000	189	3
13,000	220	3

The Design Guidelines note that the above flows may not fulfill the fire protection requirements of the municipality's insurance company or the Fire Underwriters Survey (FUS). Therefore, for specific fire flow requirements related to specific individual

[7] Sourced from Ontario Ministry of the Environment Design Guidelines for Drinking-Water Systems

developments the latest edition of the FUS document should be referenced. The FUS published a guide to recommended practice in Canada in 2020 entitled: “Water Supply for Public Fire Protection,” which contains a methodology that can be used to estimate fire flow requirements for municipal fire protection on a building-by-building basis, based on materials of construction, size, fire protection, proximity to other buildings, etc. Since design specifics of the various individual developments to be built in Millbrook are not available, FUS calculations cannot be completed at this time. It is therefore recommended that the Design Guidelines be used for estimating future fire flow requirements. Estimated fire flow requirements for Millbrook have been summarized in **Table 5.6**.

Table 5.6 - Present and Long-Term Fire Flow Requirements

Population Basis	Population	Fire Flowrate (L/s)	Fire Flow Duration (hours)	Required Fire Storage (m^3)
Present (2021)	2,558	95	2	684
Long-Term Forecast (2051) (residential and employment population included)	13,468	220	3	2,376

5.4 Long-Term Water Storage Requirements

Millbrook’s water storage currently consists of a 2,600 m^3 water storage standpipe that was built in 2016. The standpipe is located at 988 County Road 10, directly West of the Township of Cavan Monaghan municipal office building. Due to minimum pressure requirements of the municipal system only 2,115 m^3 is considered useable storage.

The Millbrook Water Storage Tank (WST) and Booster Pumping Station (BPS) Preliminary Design Report (February 2015), prepared by R.V. Anderson Associates Limited and Eramosa Engineering Limited, provides further details on the components of storage in the standpipe. **Table 5.7** summarizes excerpted standpipe information.

Table 5.7 - Millbrook Standpipe Details[8]

Parameter	Volume (m^3)
Equalization Storage (m^3)	771
Fire Storage (m^3)	840
Emergency Storage (m^3)	403
Additional Safety Storage (m^3)	101
Total Usable Storage (m^3)	**2,115**
Unusable Storage (m^3)	460
Total Storage	**2,600**

The Ontario Design Guidelines for Drinking-Water Systems recommend calculating water storage volume requirements by using the following formula:

$$Water\ Storage\ Requirement = A + B + C^{9}$$

Where 'A' is the required fire storage, 'B' is the equalization storage (25% of the maximum day demand), and 'C' is the emergency storage (25% of the summation of A and B).

Water storage volume requirements for present and long-term conditions in Millbrook have been summarized in **Table 5.8**.

Table 5.8 - Water Storage Volume Requirements

Basis	Fire Storage (m^3)	Equalization Storage (m^3)	Emergency Storage (m^3)	Total Storage (m^3)
Present (2021)	684	261	236	1,182
Long-Term Forecast (2051) (residential and employment)	2,376	1,554	982	4,912

A comparison of the existing Millbrook standpipe capacity to the water storage volume requirements on a short-term and long-term basis is shown in **Table 5.9**.

8 Sourced from R.V. Anderson Associates Limited and Eramosa Engineering Limited Millbrook Water Storage Tank and Booster Pumping Station Preliminary Design Report

9 Sourced from Ontario Ministry of the Environment Design Guidelines for Drinking-Water Systems

Table 5.9 - Existing Standpipe Compared to Water Storage Capacity Requirements

Basis	Storage Required (m^3)	Storage Available (m^3)	Difference (m^3)
Present (2021)	1,182	2,115	933
Long-Term Forecast (2051) (residential and employment)	4,912	2,115	-2,797

As the existing standpipe has a usable capacity of 2,115 m^3, the long-term forecast shows that expansion of the water storage system will be required.

Required water storage projections are illustrated in **Figure 5.2**. Based on flow and growth projections 85% of the WST's rated capacity may be exceed by 2027.

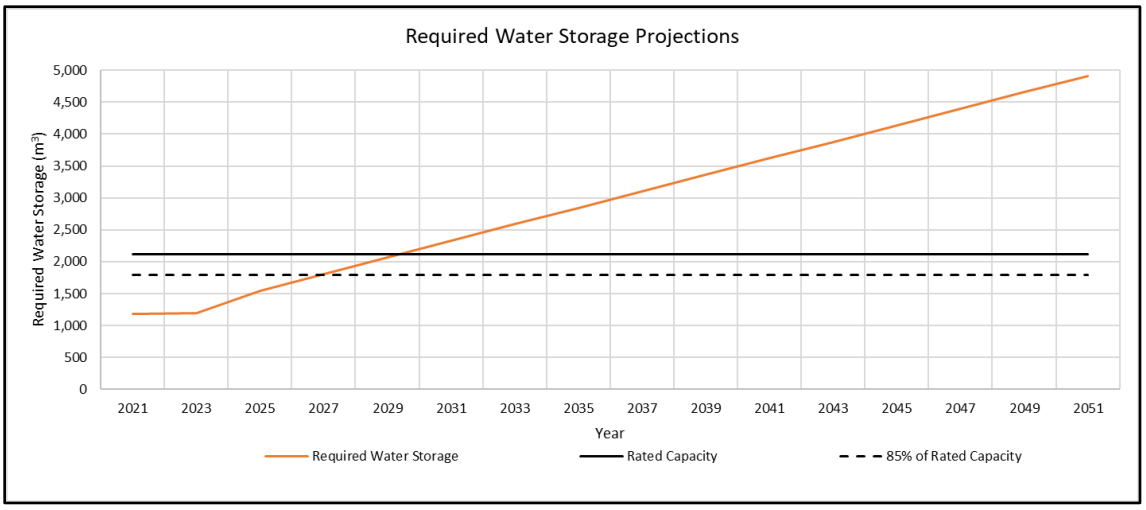


Figure 5.2 - Required Water Storage Projections

6.0 SUMMARY

Population and employment growth projections were analyzed to determine the future water and wastewater servicing needs for Millbrook. Based on the analysis completed in this report, expansion of components within the water and wastewater systems should be considered in order to accommodate growth requirements.

The analysis completed in this report will be used for upcoming deliverables as part of the Water and Wastewater Master Servicing Study, including the identification and evaluation of potential servicing strategies.

Key wastewater and water parameters are summarized below.

Wastewater Flowrates:

- Existing Capacity: 2,521 m^3/day
- Existing Peak Flow Capacity: 8,242 m^3/day
- Long-Term (2051) ADF: 3,735 m^3/day
- Long-Term (2051) MDF: 11,702 m^3/day

Water Demands:

- Existing Capacity: 3,000 m^3/day
- Long-Term (2051) ADF: 3,133 m^3/day
- Long-Term (2051) MDF: 6,214 m^3/day

Water Storage:

- Existing Capacity: 2,115 m^3
- Long-Term (2051) Storage Requirement: 4,912 m^3

7.0 REFERENCES

Metcalf & Eddy. (2014). *Wastewater Engineering Treatment and Resource Recovery.* New York: McGraw-Hill Education.

Ontario Ministry of the Environment. (2019, May 15). Design Guidelines for Drinking-Water Systems. Ontario, Canada.

Ontario Ministry of the Environment. (2019, May 3). Design Guidelines for Sewage Works. Ontario, Canada.

R.V. Anderson Associates Limited and Eramosa Engineering Limited. (2015). *Millbrook Water Storage Tank and Booster Pumping Station Preliminary Design Report.* R.V. Anderson Associates Limited.

Township of Cavan Monaghan. (2021). *Official Plan for Township of Cavan Monaghan.* Township of Cavan Monaghan.

Watson & Associates Economists Ltd. (2022). *Township of Cavan Monaghan Growth Management Strategy Final Addendum Report 2022.* Watson & Associates Economists Ltd.

APPENDIX A

Email Background Documentation

Matthew Grekula

From: Adam Fischer <adam.fischer@watsonecon.ca>
Sent: Wednesday, June 22, 2022 6:36 AM
To: Dania Chehab; Jamie Cook
Cc: Rika Law; Matthew Grekula
Subject: RE: 205371 - Cavan Monaghan PPU and 2019 to 2021 Growth

Follow Up Flag: Follow up
Flag Status: Completed

Categories: Filed by Newforma

[CAUTION EXTERNAL EMAIL] Make Sure that it is legitimate **before** Replying or Clicking on any links

Hi Dania,

For the PPUs, you can use the following:

Low	2.923
Medium	1.981
High	1.550

I'm not sure if you model population with the undercount. If so, you would then apply an undercount factor of 1.0248.

Between 2019 to 2021 in Millbrook, you can add 104 dwellings and a population of 354 excluding the undercount.

Adam Fischer, BA, MA
Senior Consultant, Planning and Land Economics

Watson & Associates Economists Ltd.

Watson & Associates Economists Ltd.
adam.fischer@watsonecon.ca
Office: 905-272-3600 ext. 252
Mobile: 647-518-2326
Fax: 905-272-3602

watsonecon.ca

Disclaimer: This message is for the use of the intended recipient(s) only and may contain information that is privileged, proprietary, confidential, and/or exempt from disclosure under any relevant privacy legislation. If you are not the intended recipient or authorized agent thereof, you are hereby notified that any review, retransmission, dissemination, distribution, copying, conversion to hard copy, taking of action in reliance on or other use of this communication is strictly prohibited. If you are not the intended recipient and have received this message in error, please notify the sender by return e-mail and delete or destroy all copies of this message. Warning: Although Watson & Associates Economists Ltd. has taken reasonable precautions to ensure no viruses are present in this email, the company cannot accept responsibility for any loss or damage arising from the use of this email or attachments.

From: Dania Chehab <dchehab@rvanderson.com>
Sent: June 20, 2022 8:10 AM
To: Adam Fischer <adam.fischer@watsonecon.ca>; Jamie Cook <cook@watsonecon.ca>
Cc: Rika Law <rlaw@rvanderson.com>; Matthew Grekula <MGrekula@rvanderson.com>
Subject: 205371 - Cavan Monaghan PPU and 2019 to 2021 Growth

Good morning Adam, Jaime,

We have a couple of questions for you as we start updating our estimates, ahead of a meeting with the MECP next week. Could you please help with the below?

- **PPU for Millbrook MZO:** MZO states "approximately 786 new dwelling units of which about 80 units will be affordable, apartment dwellings in 4-storey mixed-use buildings, 201 townhome dwellings, and about 505 detached units" What PPU should be used for us to calculate the residential population for this MZO?
- **Growth from 2019 to 2021:** Previously, Watson provided us an estimated basis for Millbrook in 2019. This is what we used in Tech Memo 1. Watson estimated a Millbrook residential population total of 2195 in 2019 and 776 dwellings. Watson has now provided us with growth information from 2021 onwards. Could you please provide a 2021 basis residential population so we can "bridge" from 2019 to 2021 baseline.

Aside – Matt and I will be away at a conference today and tomorrow, but Rika is around for any immediate questions and I will also be checking emails occasionally.

Thanks,
Dania

rva

Dania Chehab (she/her)
PROJECT MANAGER, WATER & WASTEWATER

t 416 497 8600 ext. 1456
a 2001 Sheppard Avenue East, Suite 300, Toronto, ON M2J 4Z8

rvanderson.com

SUMMER HOURS: RVA celebrates the summer season from June 3rd to September 2nd. Our offices will be closed each Friday. We will remain available to address any urgent or project related matters. For these matters, please contact mobile where provided.

R.V. Anderson Associates Limited has been engaged in the provision of professional engineering, operations, and management services since 1948. This message is intended only for the use of the individual(s) to whom it is addressed. If you are not the intended recipient(s), disclosure, copying, distribution and use are prohibited; please notify us immediately and delete this email from your systems. Please see http://www.rvanderson.com for Copyright and Terms of Use.

Matthew Grekula

From: Adam Fischer <adam.fischer@watsonecon.ca>
Sent: Wednesday, September 28, 2022 1:39 PM
To: Matthew Grekula
Cc: Dania Chehab; Rika Law; Wayne Hancock; John Connolly; Jessica Fradley; Jamie Cook
Subject: RE: 205371 - Cavan Monaghan MSS - September 2022 Questions

Follow Up Flag: Follow up
Flag Status: Completed

[CAUTION EXTERNAL EMAIL] Make Sure that it is legitimate **before** Replying or Clicking on any links

Hi Matt,

I have added my responses in red below. If you have any further questions, I'm happy to help.

Thanks,
Adam

Adam Fischer, BA, MA
Senior Consultant, Planning and Land Economics

Watson & Associates Economists Ltd.

Watson & Associates Economists Ltd.
adam.fischer@watsonecon.ca
Mobile: 647-518-2326
Office: 905-272-3600 ext. 252
Fax: 905-272-3602

watsonecon.ca

Disclaimer: This message is for the use of the intended recipient(s) only and may contain information that is privileged, proprietary, confidential, and/or exempt from disclosure under any relevant privacy legislation. If you are not the intended recipient or authorized agent thereof, you are hereby notified that any review, retransmission, dissemination, distribution, copying, conversion to hard copy, taking of action in reliance on or other use of this communication is strictly prohibited. If you are not the intended recipient and have received this message in error, please notify the sender by return e-mail and delete or destroy all copies of this message. Warning: Although Watson & Associates Economists Ltd. has taken reasonable precautions to ensure no viruses are present in this email, the company cannot accept responsibility for any loss or damage arising from the use of this email or attachments.

From: Matthew Grekula <MGrekula@rvanderson.com>
Sent: September 28, 2022 9:47 AM
To: Adam Fischer <adam.fischer@watsonecon.ca>
Cc: Dania Chehab <dchehab@rvanderson.com>; Rika Law <rlaw@rvanderson.com>; Wayne Hancock <whancock@cavanmonaghan.net>; John Connolly <jconnolly@cavanmonaghan.net>; Jessica Fradley <jfradley@cavanmonaghan.net>; Jamie Cook <cook@watsonecon.ca>
Subject: 205371 - Cavan Monaghan MSS - September 2022 Questions

Hi Adam,

We have begun restarting the Cavan Monaghan MSS project. After reading through the Growth Management Strategy Final Addendum Report (dated August 29, 2022) we have some quick questions for Watson:

- Does the 2021 to 2051 Growth in the Millbrook BUA and Millbrook Designated Greenfield area require any undercount adjustment?
    - Yes it would. Figure A-5 displays the housing and pop allocation excluding the undercount. The undercount you would apply is 102.48%.
- On page 28 of the report, Figure 2-10, the number of community area employees was noted as 1,900. On page 61 of the report, Figure B-2 states the community areas total employment growth as 1,408. Could you please let us know what number of employees we should use for community area growth in Millbrook (2021 to 2051)?
    - That depends on your usage. The 1,408 does not include work-at-home employment and the 1,900 metric does.
- From previous correspondence with you (email dated October 12, 2021), the estimated Millbrook Employement Area and Community Area jobs estimate for 2019 was 700 jobs. Could you please let us know the basis of jobs that we can use for Millbrook Employment Area / Community Areas for 2021?
    - Our total job forecast from 2019 to 2021 is 324. Based on the assumed forecast percentages from 2021 to 2051, the would result in an additional 270 jobs in Millbrook (including WAH). This would bring the total to 970.
- This question may be a little bit of a reach: Do we have any idea for what percentage of the employees in the employement growth and community areas will also be living in Millbrook?
    - This isn't something we've contemplated. I suppose you could look at Statistics Canada Community Flow data to discern some trends at a municipal level.

Thank you for the help! and all the best,

rva

Matthew Grekula, EIT

PROCESS DESIGNER

t ~~416 497 8600 ext. 1426~~ | m 905 751 3762

a 2001 Sheppard Avenue East, Suite 300, Toronto, ON M2J 4Z8

rvanderson.com

EXTENDED SUMMER HOURS: RVA celebrates the summer season from June 3rd to September 30th. Our offices will be closed each Friday. We will remain available to address any urgent or project related matters. For these matters, please contact mobile where provided.

R.V. Anderson Associates Limited has been engaged in the provision of professional engineering, operations, and management services since 1948. This message is intended only for the use of the individual(s) to whom it is addressed. If you are not the intended recipient(s), disclosure, copying, distribution and use are prohibited; please notify us immediately and delete this email from your systems. Please see http://www.rvanderson.com for Copyright and Terms of Use.

APPENDIX B

Wastewater Data

Year	Month	Date	Total Flow (m^3)	Average Daily (m^3)	Maximum Daily (m^3)	Tupper St Discharge Total Flow (m^3)
2017	January	Jan-17	23,663	763	1,169	19,462
	February	Feb-17	20,939	749	1576	17,158
	March	Mar-17	24,704	797	1484	21,056
	April	Apr-17	31,958	1,065	1,907	27,513
	May	May-17	37,404	1,207	3,190	32,094
	June	Jun-17	29,066	969	1,761	21,695
	July	Jul-17	19,174	619	904	15,366
	August	Aug-17	16,561	534	730	13,157
	September	Sep-17	22,312	744	1,108	13,958
	October	Oct-17	18,963	611	822	13,909
	November	Nov-17	20,340	678	1190	15,912
	December	Dec-17	17,619	568	747	13,809
2018	January	Jan-18	23,526	759	2054	18,202
	February	Feb-18	24,961	891	2560	19,898
	March	Mar-18	22,916	2296	148	18,655
	April	Apr-18	40,767	1,359	2,634	33,533
	May	May-18	23,945	774	1,169	17,159
	June	Jun-18	15,978	533	871	11,511
	July	Jul-18	14,423	465	595	10,698
	August	Aug-18	15,524	501	828	11,444
	September	Sep-18	14,867	496	597	11,109
	October	Oct-18	16,895	545	690	13,114
	November	Nov-18	25,236	841	1,532	20,175
	December	Dec-18	24,419	788	1,217	19,861
2019	January	Jan-19	21,054	679	1,160	16,106
	February	Feb-19	18,515	661	1,971	13,456
	March	Mar-19	27,512	887	2,918	19,674
	April	Apr-19	40,211	1,340	2,135	33,227
	May	May-19	36,674	1,183	2,172	29,748
	June	Jun-19	29,554	985	1,625	20,074
	July	Jul-19	17,926	578	793	12,532
	August	Aug-19	16,473	547	601	10,921
	September	Sep-19	16,856	562	651	10,694
	October	Oct-19	18,388	593	1,056	12,009
	November	Nov-19	21,504	717	866	15,358
	December	Dec-19	25,918	836	1,412	18,940
2020	January	Jan-20	36,899	1,190	3,373	29,060
	February	Feb-20	22,805	786	1,004	16,467
	March	Mar-20	40,266	1,299	2,344	30,894
	April	Apr-20	30,780	1,026	1,495	23,445
	May	May-20	24,551	792	1,183	17,336
	June	Jun-20	19,013	634	888	12,534
	July	Jul-20	18,790	606	942	12,311

	August	Aug-20	20,202	652	854	12,817
	September	Sep-20	19,842	662	872	13,320
	October	Oct-20	20,637	666	880	13,667
	November	Nov-20	21,339	713	1,015	14,578
	December	Dec-20	30,116	971	1,322	21,981
2021	January	Jan-21	25,370	818	1,063	15,202
	February	Feb-21	18,949	677	873	15,044
	March	Mar-21	21,266	969	1,198	21,587
	April	Apr-21	25,155	839	903	25,155
	May	May-21	15,782	509	793	15,781
	June	Jun-21	20,673	689	774	11,640
	July	Jul-21	25,257	814	1,100	25,256
	August	Aug-21	21,188	683	881	21,187
	September	Sep-21	32,372	1,067	3,349	N/A
	October	Oct-21	38,859	1,254	1,640	38,859
	November	Nov-21	30,108	1,004	1,210	30,108
	December	Dec-21	38,685	1,248	1,823	38,684

APPENDIX 1-2

Watson & Associates Economists Ltd. Growth Management Strategy Final Addendum Report, 2022



Growth Management Strategy Final Addendum Report, 2022

Township of Cavan Monaghan

Watson & Associates Economists Ltd.
905-272-3600
info@watsonecon.ca

August 29, 2022

Table of Contents

Page

Executive Summary ..... **i**

1. Introduction **1-1**

2. Township of Cavan Monaghan Growth Forecast and Urban Land Needs, 2051 ..... **2-1**

2.1 Background 2-1
2.2 Urban Commercial Demand and Land Needs, 2021 to 2051 2-2
2.3 Township of Cavan Monaghan Community Area Land Needs, 2021 to 2051 2-4
2.3.1 Township of Cavan Monaghan Residential Land Supply, 2021 2-4
2.3.2 Township of Cavan Monaghan Population and Housing Growth Forecast, 2021 to 2051 2-8
2.3.3 Township of Cavan Monaghan Community Area Urban Land Needs, 2051 2-10
2.4 Township of Cavan Monaghan Employment Area Land Needs, 2021 to 2051 2-12
2.4.1 Township of Cavan Monaghan Employment Area Land Supply, 2021 2-12
2.4.2 Township of Cavan Monaghan Employment Growth Forecast, 2021 to 2051 2-13
2.4.3 Township of Cavan Monaghan Employment Area Urban Land Needs, 2051 2-16

3. Location Options for Future Urban Expansion and Policy Recommendations **3-1**

3.1 Introduction 3-1
3.2 Urban Employment Area Conversions 3-1
3.2.1 Policy Context 3-2

Table of Contents (Cont'd)

Page

3.2.2 Evaluation of Employment Area Conversions 3-3
3.3 Location Options for Future Urban Expansion 3-9
3.3.1 Approach to Assessing Location Options for Urban Land Expansion 3-9
3.3.2 Overview of Broad Location Options for Future Urban Expansion 3-10
3.3.3 Servicing Considerations for Future Urban Expansion 3-12
3.4 Policy Recommendations 3-12

4. Conclusion and Next Steps 4-1

Appendix A Residential Growth Forecast, 2021 to 2051 ..... A-1

Appendix B Supplemental Urban Employment Area Supply and Forecast Information B-1

Appendix C Evaluation of Urban Employment Area Conversions C-1

List of Acronyms and Abbreviations

B.U.A.	Built-up area
D.G.A.	Designated greenfield area
G.G.H.	Greater Golden Horseshoe
G.M.S.	Growth Management Strategy
L.N.A.	Land Needs Assessment
M.C.R.	Municipal Comprehensive Review
M.M.A.H.	Ministry of Municipal Affairs and Housing
M.Z.O.	Minister's Zoning Order
N.F.P.O.W.	No fixed place of work
O.P.	Official Plan
P.P.S.	Provincial Policy Statement
P.P.U.	Persons per unit
S.A.B.E.	Settlement Area Boundary Expansion
SSA	Special Study Area
T.A.C.	Technical Advisory Committee



Executive Summary

Executive Summary

Introduction

Watson & Associates Economists Ltd. (Watson) completed the Township of Cavan Monaghan Growth Management Strategy (G.M.S.) in May 2020. This updated Growth Plan has been prepared in conjunction with a "new" Land Needs Assessment (L.N.A.) methodology for the Greater Golden Horseshoe (G.G.H.). In response to Amendment 1 to the Growth Plan, Peterborough County has recently completed a Municipal Comprehensive Review (M.C.R.) which sets out the long-term County (and its member municipalities) outlook for population, housing and employment growth as well as corresponding urban land requirements to the year 2051. The 2051 horizon adds an additional 10 years from the previous G.M.S.

In addition to the above proposed provincial changes to the Growth Plan, the scope of the G.M.S. has been expanded to specifically include a review of Special Study Area No. 1 (SSA-1), as identified in Schedule A in the Township's Official Plan (O.P.), as a potential location for future development in the Township over the long term. As a result of the above-mentioned provincial and local factors, there is a need for the 2020 Township of Cavan Monaghan G.M.S., hereinafter referred to as the 2020 G.M.S., to be updated. The findings and recommendations of the 2020 G.M.S. still stand unless updated through this addendum report.

Urban Land Needs

Commercial Land Needs

- The total supply of vacant commercial lands in the Millbrook designated greenfield area (D.G.A.) is approximately 7 net ha (17 net acres). The demand for commercial lands over the next 30 years exceeds the supply of vacant commercial lands in the Millbrook D.G.A.
- To accommodate forecast commercial growth to the year 2051, approximately 6 net ha (15 net acres) of additional designated commercial lands are required.

Residential Land Needs

- Approximately 1,640 units were found to be within the development approvals process (registered un-built, draft approved, and currently under review) across

the Township. Slightly over half of the Township's residential supply in the development approvals process is in the form of low-density units.

- The updated Township of Cavan Monaghan G.M.S. forecasts population growth of 7,300 between 2021 and 2051, representing an annual population growth rate of 1.8%. By the year 2051, the Township's population base is forecast to reach approximately 17,600 persons.
- Over the 2021 to 2051 forecast period, approximately 94% of the Township's forecast household growth has been allocated to Millbrook, with the remaining 6% allocated to the Rural Area.
- Through this 2051 G.M.S. update, the revised urban residential land needs for Cavan Monaghan result in an additional urban land requirement of approximately 75 ha (185 acres) by 2051.

Urban Employment Area Land Needs

- There are 45 ha (111 acres) of developable designated Urban Employment Area lands within the current Millbrook Urban Settlement Area. Of this total supply, 40 gross ha (99 gross acres) remain vacant as of May 2022.
- Total employment within the Township is expected to increase from 3,900 in 2021 to 8,100 in 2051, representing an increase of 4,200 jobs or a growth rate of 2.5% annually.
- Land-based commercial, industrial and institutional employment sectors are anticipated to account for approximately 74% of employment growth over the forecast period. The "no fixed place of work" and "work at home" employment categories are forecast to comprise the remaining 26% of employment growth.
- Urban Employment Areas in the Township are forecast to accommodate approximately 1,600 employees over the 2021 to 2051 period. This represents approximately 38% of the Township's total employment growth over that period.
- To accommodate forecast employment growth on Urban Employment Areas to the year 2051, 34 ha (84 acres) of additional designated Urban Employment Areas will be required.

Location Options for Future Urban Expansion and Policy Recommendations

- In order to accommodate future needs, the conversion of several of the Township's current urban Employment Areas to a non-employment use (i.e., Community Area) is recommended.

- There is a need for additional urban Employment Area land and urban Community Area land to 2051. The recommendation to convert the subject urban Employment Area lands to Community Area provides a more compatible urban land use structure for the Millbrook Settlement Area over the long term as the community continues to expand and urbanize.
- Considering the proximity of the subject lands to existing or planned Community Area uses, the recommendation to convert the subject Employment Area lands to a Community Area use is appropriate and represents good planning.
- In accordance with the land needs and findings of the Peterborough County M.C.R., lands outside Millbrook, including those lands in SSA-1, are not required to accommodate Community Area lands to 2051.

Policy Recommendations and Strategic Directions

A set of updated policy recommendations have been provided under the following themes:

- Planning for Population, Housing, and Employment Growth in the Township of Cavan Monaghan;
- Planning for Growth in Urban Employment Areas;
- Planning for Growth in Built-up Areas and Designated Greenfield Community Areas; and
- Planning for Growth in Commercial Areas.



Report

Chapter 1
Introduction

1. Introduction

Watson & Associates Economists Ltd. (Watson) completed the Township of Cavan Monaghan Growth Management Strategy (G.M.S.) in May 2020. The Township G.M.S. provided a long-term land use planning policy framework for urban and rural development across the Township to the year 2041. On August 28, 2020, the Province of Ontario released an Amendment (referred to as Amendment 1) to A Place to Grow: Growth Plan for the Greater Golden Horseshoe, 2019. The Growth Plan and Amendment 1 have been incorporated into an Office Consolidation, August 2020 document, hereinafter referred to as the Growth Plan, 2019. The updated Growth Plan, 2019 has been prepared in conjunction with a "new" Land Needs Assessment (L.N.A.) methodology for the Greater Golden Horseshoe (G.G.H.). These documents are in effect as of August 28, 2020. In response to Amendment 1 to the Growth Plan, 2019, Peterborough County recently completed its Municipal Comprehensive Review (M.C.R.) which sets out the long-term County (and its member municipalities) outlook for population, housing and employment growth as well as corresponding urban land requirements to the year 2051.

The population and employment growth forecast horizon set out in Schedule 3 of the Growth Plan, 2019 and the applicable time horizon for land use planning has now been extended to 2051 (from the previous 2041 planning horizon). It is further noted that the recommended Schedule 3 growth forecasts are to be treated as minimums, with higher growth forecast alternatives permitted by upper- and single-tier municipalities through their respective M.C.R. process.[1] If an alternative growth forecast is utilized, which exceeds Schedule 3 of the Growth Plan, 2019, the M.C.R. must demonstrate that the alternate growth scenario meets the Growth Plan, 2019 policy objectives of accommodating a range of housing choices to meet market demand and the needs of current and future residents, as well as providing additional labour opportunities for the G.G.H. labour market.[2] It should be noted that higher forecasts established by upper- and single-tier municipalities through their M.C.R.s will not apply to provincial ministries and agencies.[3]

[1] Growth Plan, Office Consolidation 2020, Policy 5.2.4., p. 56.
[2] A Place to Grow: Growth Plan for the Greater Golden Horseshoe, Land Needs Methodology for the Greater Golden Horseshoe, p. 5.
[3] Growth Plan, Office Consolidation 2020, Policy 5.2.4.8., p. 57.

In addition to the above proposed provincial changes to the Growth Plan, the scope of the G.M.S. has been expanded to specifically include a review of Special Study Area No. 1 (SSA-1) lands, as identified in Schedule A in the Township's Official Plan (O.P.), as a potential location for future development in the Township over the long term.

As a result of the above-mentioned provincial and local factors, there is a need for the 2020 Township of Cavan Monaghan G.M.S., hereinafter referred to as the 2020 G.M.S., to be updated. The findings and recommendations of the 2020 G.M.S. still stand unless updated through this addendum report.

Chapter 2
Township of Cavan Monaghan Growth Forecast and Urban Land Needs, 2051

2. Township of Cavan Monaghan Growth Forecast and Urban Land Needs, 2051

2.1 Background

On August 28, 2020, the Ministry of Municipal Affairs and Housing (M.M.A.H.) released the final L.N.A. methodology in accordance with Growth Plan, 2019 policy 5.2.2.1 c).[1] Upper- and single-tier municipalities in the G.G.H. are required to use this methodology to assess the quantity of land required to accommodate forecast growth in conformity with the policies in the Growth Plan, 2019. In accordance with the Growth Plan, 2019 and the L.N.A. methodology, key areas of consideration related to this review also include requirements to:

- Accommodate all housing market segments;
- Avoid housing shortages;
- Consider market demand;
- Accommodate all employment types including those that are evolving; and
- Plan for all infrastructure that is needed to meet the complete communities objectives to the horizon of the Plan.

The methodology identifies that the results of an L.N.A. can only be implemented through an M.C.R. An M.C.R. is a new Official Plan (O.P.), or an O.P. Amendment initiated by an upper- or single-tier municipality under section 26 of the *Planning Act* that comprehensively applies the policies and schedules in the Growth Plan.

In accordance with the L.N.A. methodology, land needs are to be assessed across two different areas including Community Areas and Employment Areas, as defined below:

> "Community Areas: Areas where most of the housing required to accommodate the forecasted population will be located, as well as most population-related jobs, most office jobs and some employment land employment jobs. Community areas include *delineated built-up areas and designated greenfield areas.*

[1] Land Needs Assessment Methodology for the Greater Golden Horseshoe. Ontario. August 28, 2020.

> Employment Areas: Areas where most of the employment land employment jobs are (i.e. employment in industrial-type buildings), as well as some office jobs and some population-related jobs, particularly those providing services to the *employment area. Employment areas* may be located in both *delineated built-up areas* and *designated greenfield areas*."[1]

In total, the L.N.A. methodology provides six key respective steps to establishing Community Area and Employment Area land needs. The six key steps for Community Area land needs are outlined in section 2 of the L.N.A. methodology, while the Employment Area land needs steps are outlined in section 3.[2],[3]

2.2 Urban Commercial Demand and Land Needs, 2021 to 2051

The Millbrook Urban Settlement Area has approximately 9,200 sq.m (99,000 sq.ft.) of occupied commercial space (office and retail). The ratio of commercial space per resident in Millbrook is approximately 3.5 sq.m (38 sq.ft.), which is considered low compared to markets of a similar size. In addition, there is approximately 1,500 sq.m (16,000 sq.ft.) of office space in Millbrook.

In total, approximately 48% of the commercial space in Millbrook is accommodated by retail and food services (restaurant/drinking places), while over half of the commercial space accommodates services and institutional uses (medical, health services and dental).[4],[5] The composition of the commercial base includes a large services component as compared to other urban areas of comparable size.

While the total commercial building space has remained unchanged since 2019 (i.e., no new commercial building space added), there have been several changes in the use of

[1] Land Needs Assessment Methodology for the Greater Golden Horseshoe. Ontario. August 28, 2020., pp. 6-7.
[2] Ibid., pp. 8-9.
[3] Ibid., p. 15.
[4] Includes grocery stores, convenience stores and food services (restaurants and establishments that sell food and drink items).
[5] Services includes commercial establishments that offer non-tangible services, including travel agencies, banks, real estate and insurance agencies, hair salons, automotive repair.

the commercial building space in Millbrook. New businesses occupying commercial space in Millbrook have largely included businesses that provide services which have replaced commercial businesses that sell goods.

Since 2019, the retail vacancy rate has increased slightly from 6% to 8% (870 sq.m/ 9,400 sq.ft. of vacant building space). While the commercial building space vacancy rate has increased, the vacancy rate is still within a healthy commercial vacancy rate range (5% to 10% is considered a balanced market).

Figure 2-1 summarizes the forecast commercial land needs to 2051. Key observations include the following:

- A large portion of the commercial building space in Millbrook is concentrated in the downtown core in older buildings, while vacant commercial lands that offer opportunities for future commercial development are being concentrated in the northeast area of Millbrook (County Road 10/Fallis Line). These commercial lands can accommodate a range of commercial options not easily accommodated in the downtown area, as well as support opportunities for commercial developments that would reduce shopping trips outside the community.
- In order to support the commercial needs of Millbrook and the surrounding area to 2051, Millbrook will require an additional 34,900 sq.m (376,000 sq.ft.) of commercial building space, based on a target per capita ratio of 4.3 sq.m/46 sq.ft. of commercial space per resident.
- In terms of land requirements over the 2021 to 2051 forecast period, the Township is anticipated to generate demand for 13 net ha (32 net acres) of commercial lands associated with forecast commercial growth in Millbrook.
- The development proposal for commercial development at the northeast corner of County Road 10/Fallis Lane (lands subject to a Minister's Zoning Order (M.Z.O.), referred to as the Vargas lands) on approximately 3 ha (7 acres) of commercial land is anticipated to largely satisfy the immediate commercial needs of residents today and over the short term (i.e., 5 to 7 years).
- The total supply of vacant commercial lands in the Millbrook D.G.A. is approximately 7 net ha (17 net acres).[1] As summarized in Figure 2-1, the

[1] Excludes approximately 1.7 ha (approximately 4 acres) of small infill sites in the built-up area (B.U.A.).

demand for commercial lands over the next 30 years exceeds the supply of vacant commercial lands in the Millbrook D.G.A.

- To accommodate forecast commercial growth to the year 2051, approximately 6 net ha (15 net acres) of additional designated commercial lands are required.
- Opportunities for mixed-use developments in the D.G.A., such as the development proposal by CSU Developments Inc. and Vargas in the west end of Millbrook (southwest of Fallis Line and County Road 10) would reduce the commercial land required by 1 ha for every 2,500 sq.m/27,000 sq.ft. of commercial space accommodated in a mixed-use development.
- The Township should pursue adding more designated commercial lands to the Millbrook Urban Settlement Area.

Figure 2-1
Township of Cavan Monaghan
Urban Commercial Land Needs, 2021 to 2051

Growth Period	Total Commercial G.F.A. Demand, sq.m	G.F.A. Adjusted for Intensification, sq.m[1]	Building Space Converted to Land Area, ha	Total Land Requirement, ha (25% Building Coverage)	Vacant Commercial Land Supply, ha[2]	Land Needs, Surplus/ (Shortfall), ha
	A	B = A x 90%	C = B / 10,000	D = C x 4	E	F = E – D
2021-2051	34,900	31,400	3.14	13	7	(6)

[1] Assumes 10% of commercial development will be accommodated on small infill sites of less than 1 ha. There are approximately 8 vacant small infill sites totaling 1.7 ha (approximately 4 acres).
[2] Total available commercial lands measuring at least 1 ha.
Source: Watson & Associates Economists Ltd., 2022.

2.3 Township of Cavan Monaghan Community Area Land Needs, 2021 to 2051

2.3.1 Township of Cavan Monaghan Residential Land Supply, 2021

An updated review of active development applications, greenfield supply opportunities, and housing intensification opportunities within the built-up area (B.U.A.) were undertaken to determine the housing potential within Cavan Monaghan. To determine an inventory of D.G.A. lands in Millbrook currently not active in the development approvals process, a desktop review was carried out using mapping data and aerial photography. The housing unit supply potential was calculated on developable lands using residential density and housing mix assumptions based on existing residential

development conditions and residential density trends anticipated in active development plans in Millbrook.

Intensification supply opportunities in Millbrook were identified within the B.U.A. in accordance with the definition of housing intensification as per subsection 1.1.3.3 of the 2020 P.P.S. Vacant lots within the B.U.A. of Millbrook were reviewed for residential intensification opportunities. A potential unit yield for each site was determined based on existing residential development conditions and residential density trends of development activity in Millbrook. Long-term redevelopment opportunities were not considered a part of this intensification supply analysis. This work was also informed by the housing intensification analysis for Cavan Monaghan prepared for the Peterborough County M.C.R.

The potential to accommodate new housing development throughout the Township as of May 2022 is shown in Figure 2-2. A map highlighting the development opportunities within the current Millbrook Urban Settlement Area is shown in Figure 2-3.

- Approximately 1,640 units were found to be within the development approvals process (registered un-built, draft approved, and currently under review) across the Township. Slightly more than half of the Township's residential supply in the development approvals process is in the form of low-density units.
- The total units in active development applications include those associated with the CSU Developments Inc. and Vargas lands, which received an approved M.Z.O. on April 1, 2022.
- Units in the development approvals process represent 86% of the total housing supply across the Township.
- The unit yield of the Township's residential greenfield development opportunities is estimated at only 235 units.[1]
- There are currently limited opportunities within the Millbrook B.U.A. The estimated unit yield of the residential intensification opportunities in Millbrook is estimated at 215 units.[2]

[1] Assumed D.G.A. densities of 25 low-density units per ha, 40 medium-density units per ha, and 60 high-density units per ha.
[2] A B.U.A. supply of 215 units was identified through the Peterborough County M.C.R. A supply of 125 ground-related units and 90 high-density units (including secondary suites) was identified.

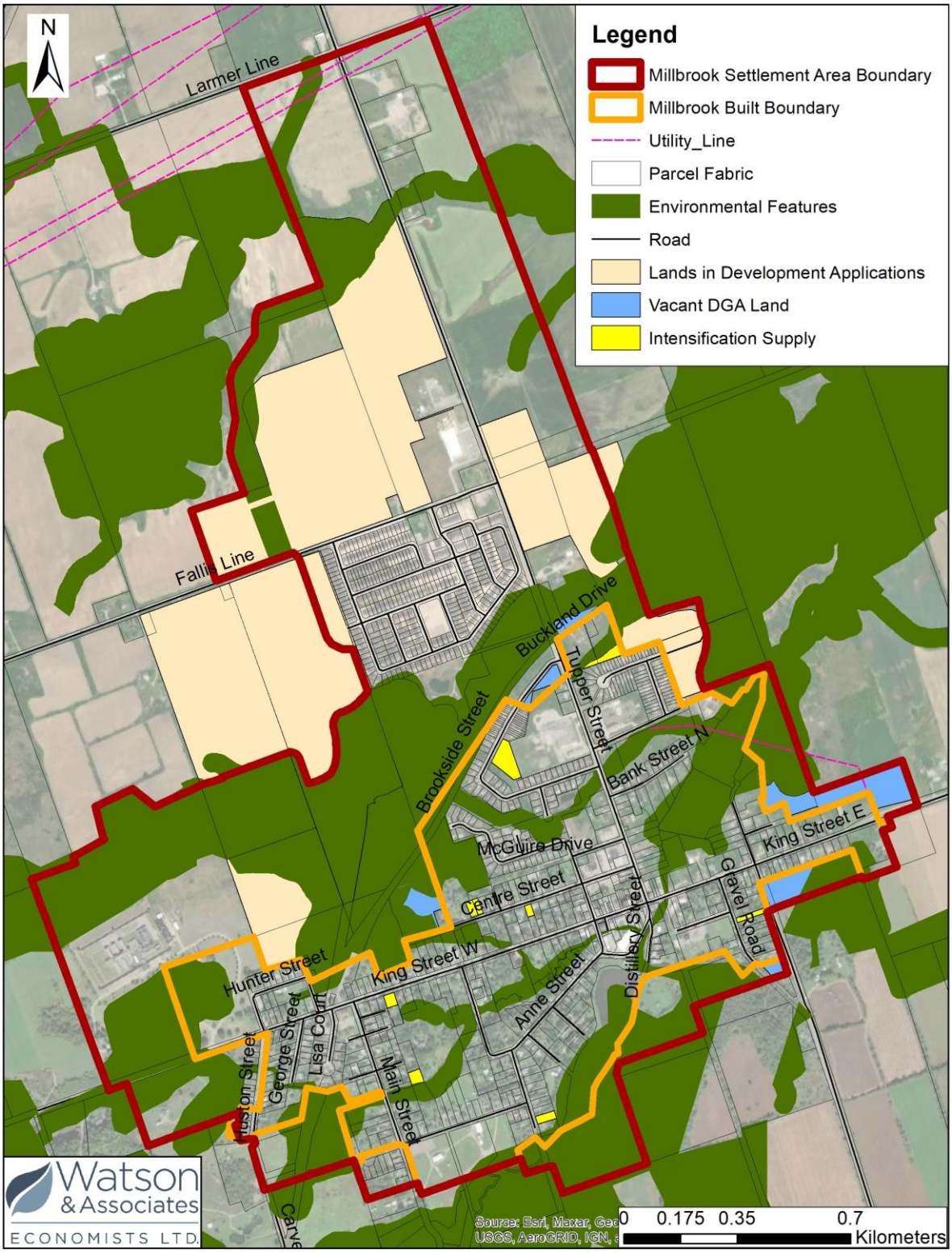
- It is evident that Millbrook, which is the only settlement area in the Township with full municipal services, will continue to be the focus of current and future development.

Figure 2-2
Residential Supply Opportunities in the Township of Cavan Monaghan
by Type of Opportunity as of May 2022

	Housing Type				
	Low Density	Medium Density	High Density	**Total**	**Share**
Millbrook Urban Settlement Area					
Within Built Boundary					
Development Approvals Process	-	-	-	-	0%
Intensification Opportunities	40	80	95	215	10%
Total Within Built Boundary	**40**	**80**	**95**	**215**	**10%**
Outside Built Boundary					
Development Approvals Process	855	357	393	1,605	77%
Greenfield Opportunities	108	92	35	235	11%
Total Outside Built Boundary	**963**	**449**	**428**	**1,840**	**88%**
Other Settlement Areas					
Development Approvals Process	34	-	-	34	2%
Hamlets	34	-	-	34	2%
Total in Other Settlement Areas	**34**	**-**	**-**	**34**	**2%**
Township Total	**1,037**	**529**	**523**	**2,089**	
Township Share	**50%**	**25%**	**25%**	**100%**	

Note: Numbers may not add precisely due to rounding.
Source: Derived by Watson & Associates Economists Ltd. using Township of Cavan Monaghan and County of Peterborough data, and through desktop review. Low density is considered to be singles and semi-detached, medium density is considered to be townhouses and multiples, and high density is considered to be apartments.

Figure 2-3
Residential Supply Opportunities in Millbrook by Type of Opportunity as of May 2022



2.3.2 Township of Cavan Monaghan Population and Housing Growth Forecast, 2021 to 2051

Since the release of the Township of Cavan Monaghan G.M.S. in 2020, Watson and Township staff have been working with Peterborough County and its consultant to ensure the findings of the current County M.C.R. reflect the preferred planning direction for Cavan Monaghan. Accordingly, through this collaboration the Peterborough County M.C.R. is consistent with the G.M.S. work regarding the urban L.N.A. for Cavan Monaghan to the year 2051. The Peterborough County M.C.R. has identified a County-wide population increase of 18,200 between 2021 and 2051, resulting in a need for an additional 9,640 households. The Township of Cavan Monaghan has been allocated the largest share of this County-wide housing growth at approximately 34% of the total, representing an increase of 3,320 housing units between 2021 and 2051. Of this housing unit forecast for Cavan Monaghan, the Peterborough County M.C.R. also identified approximately 3,190 units to be allocated to the Millbrook Urban Settlement Area, representing 96% of total household growth for the Township.

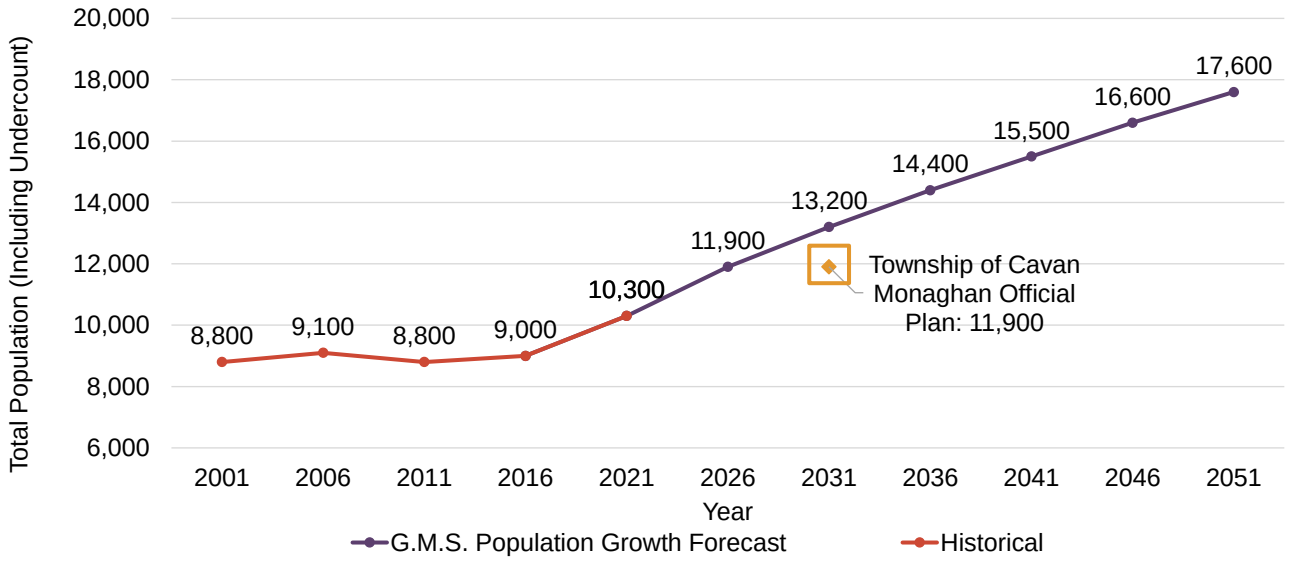
Building on the results of the Peterborough County M.C.R. and the Cavan Monaghan 2020 G.M.S., this G.M.S. update summarizes the population and housing forecast for the Township by planning policy area (i.e. B.U.A, D.G.A. and remaining rural area) from 2021 to 2051. As shown in Figure 2-4, the updated Township of Cavan Monaghan G.M.S. forecasts population growth of 7,300 between 2021 and 2051, which represents an annual population growth rate of 1.8%. By the year 2031, the Township's population base is forecast to reach 13,200, outpacing the Township's current O.P. population forecast by approximately 1,300 people. By the year 2051, the Township's population base is forecast to reach approximately 17,600 persons.

Figure 2-5 summarizes the household growth allocations between the B.U.A., the D.G.A. of the Millbrook Urban Settlement Area and the Rural Area of the Township based on the Cavan Monaghan G.M.S. update. Over the 2021 to 2051 forecast period, approximately 94% of the Township's forecast household growth has been allocated to Millbrook, with the remaining 6% allocated to the Rural Area. This is consistent with the Township's existing O.P. policies which require that most of the Township's growth be directed to the Millbrook Urban Settlement Area.

In response to direction from Township of Cavan Monaghan Council on August 2, 2022, the intensification assumption for the Millbrook B.U.A. has been downwardly adjusted to

accommodate a forecast growth of 215 units.[1] Future work should be conducted to further assess the potential of the Millbrook B.U.A. to accommodate residential development. While the current intensification target recognizes an ultimate capacity of 215 units, the Township should strive to achieve an intensification rate of 15% towards and beyond the planning horizon of 2051. Additional information regarding the population and housing growth forecast for the Township can be found in Appendix A.

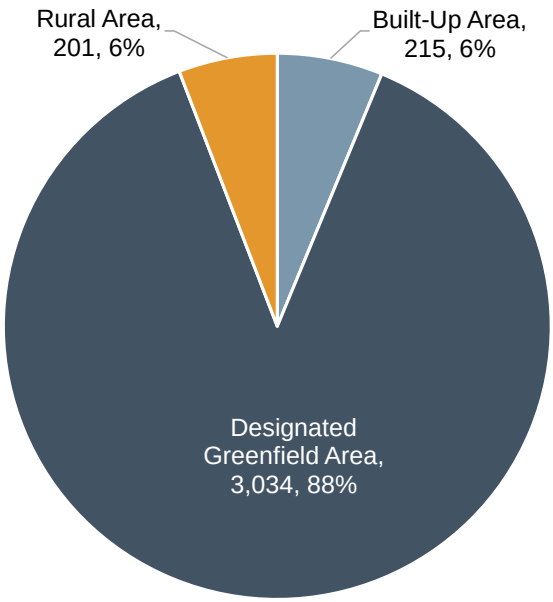
Figure 2-4
Township of Cavan Monaghan Population Growth Forecast, 2021 to 2051



Note: Population includes the net Census undercount estimated at 2.5%.
Source: 2001 to 2021 from Statistics Canada Census. Forecast by Watson & Associates Economists Ltd., 2022.

[1] The revised B.U.A. intensification assumption reflects the policy direction to not permit residential development on the former Millbrook Correctional Centre.

Figure 2-5
Allocation of Township of Cavan Monaghan Household Growth Forecast, 2021 to 2051



Source: Watson & Associates Economists Ltd., 2022.

2.3.3 *Township of Cavan Monaghan Community Area Urban Land Needs, 2051*

Following direction from Township of Cavan Monaghan Council to revise the intensification assumption on August 2, 2022, the draft forecast and allocation to Millbrook has also been revised. A slight increase to the Township-wide share of high-density units was conducted to align with development patterns in active development applications as well as supporting more complete communities in existing and future D.G.A. lands (see Appendix A). It is assumed that shifting forecast high-density units from the B.U.A. into the Millbrook D.G.A. would result in denser development patterns. Accordingly, the greenfield density assumption has been revised to 60 people and jobs per developable hectare.[1] The resulting D.G.A. Community Area land requirement remains at 74.7 gross ha.

The 2020 G.M.S. identified a residential land need of 49 ha (121 acres) by 2041. Through this 2051 G.M.S. update, the revised urban residential land needs for Cavan

[1] As shown in Table 14 of the Peterborough County Growth Analysis Report, March 28, 2022, current proposed developments within the Millbrook D.G.A. are expected to achieve a density of 63 people and jobs per hectare.

Monaghan result in an urban land requirement of approximately 75 ha (185 acres) by 2051. The residential shortfall of 75 ha (185 acres) aligns with the results of the Peterborough County M.C.R. The Peterborough County M.C.R. concluded that additional urban lands beyond those identified in the Millbrook Urban Settlement Area are not required within the 2051 planning horizon. Based on our review of the County's long-term urban land needs analysis for the Township of Cavan Monaghan, Township staff and their Consultant Team support these findings. Accordingly, urban land expansion within the area of SSA-1 is not required within the 2051 planning horizon to accommodate urban population as set out in the Peterborough County M.C.R.

It is noted that the land need of 75 gross ha (185 gross acres) is in addition to the CSU Developments Inc. and Vargas lands which were recently approved through an M.Z.O by the Province and considered part of the existing supply within active development applications. Figure 2-6 displays the Community Area Urban Land Needs analysis for Millbrook to 2051.

Figure 2-6
Millbrook Settlement Area Growth Forecast, 2021 to 2051

Item	Calculation	Result
Urban Housing Demand, 2021 to 2051	A	3,249
Units in Active Development Applications[1]	B	1,605
Intensification Allocation[2]	C	215
Vacant Greenfield Unit Supply	D	235
Unit Shortfall	E = A - B - C - D	1,194
Population (Including Undercount) Shortfall[3]	F = E * 2.791	3,333
Shortfall of Community Area Jobs	G	1,152
Shortfall of Community Area People and Jobs (P&J)	H = F + G	4,485
Greenfield P&J Density, 2021 to 2051[4]	I	60
Community Area Land Requirement at 2051 (gross ha)	**J = H / I**	**74.7**

Source: Watson & Associates Economists Ltd., 2022.
[1] Population in Active Development Applications includes land area and units associated with the recently approved MZOs of CSU and Vargas.
[2] 215 units for intensification as determined through the Peterborough County M.C.R.
[3] P.P.U. of 2.791 reflects a blended P.P.U which was determined by calculating the unit shortfall by structure type.
[4] Reflecting the density of future D.G.A. lands only. The Growth Plan minimum density requirement of 50 people and jobs per hectare is measured as a combined total of all D.G.A. land at 2051.

It is further noted that an additional M.Z.O. has been approved by the Province within the northeast area of the Township (Kawartha Downs). The population and employment potential associated with this M.Z.O. is considered to be in addition to the

Township's 2051 population and employment allocation as per the Peterborough County M.C.R.

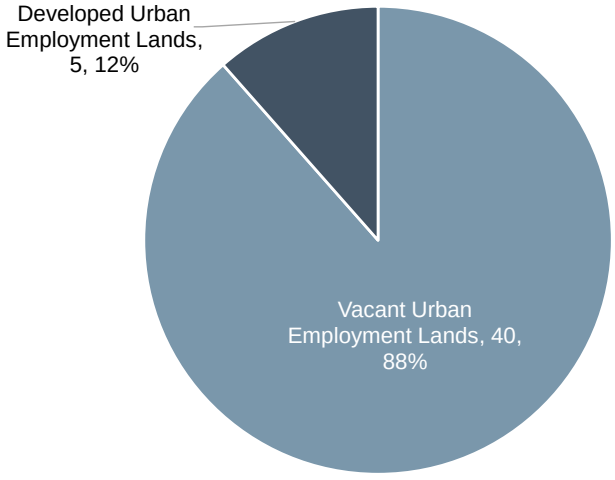
2.4 Township of Cavan Monaghan Employment Area Land Needs, 2021 to 2051

2.4.1 Township of Cavan Monaghan Employment Area Land Supply, 2021

The Township of Cavan Monaghan consists of 905 gross ha (2,236 gross acres) or 589 net ha (1,456 net acres) of designated Employment Areas. A significant amount of these designated Employment Areas can be found in the Rural Areas and under the Rural Employment Area designation, while a small portion is within the current Millbrook Urban Settlement Area and designated as Urban Employment Area. For the purposes of this report addendum, the Urban Employment Area land supply and Employment Area land needs for Millbrook have been updated and re-evaluated within the context of anticipated urban development within Millbrook to the year 2051. For details on the rural employment land supply, refer to the Township of Cavan Monaghan G.M.S, 2020.

There are 45 ha (111 acres) of developable designated Urban Employment Area lands within the current Millbrook Urban Settlement Area. As shown in Figure 2-7, of this total supply, 40 gross ha (99 gross acres) remain vacant as of May 2022.

Figure 2-7
Developed and Vacant Urban Employment Lands in Millbrook (gross ha)

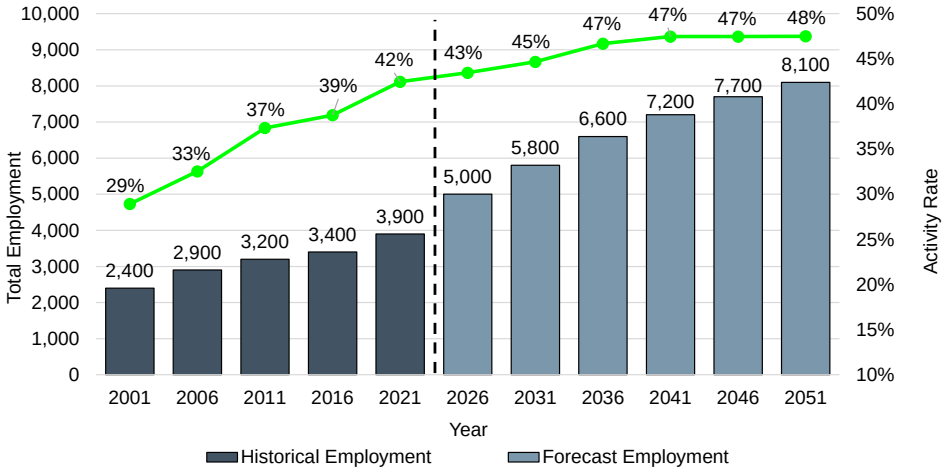


Note: Numbers may not add precisely due to rounding.
Source: Watson & Associates Economists Ltd., 2022

2.4.2 Township of Cavan Monaghan Employment Growth Forecast, 2021 to 2051

Building on the Township of Cavan Monaghan G.M.S., 2020 an employment forecast by major sector to 2051 has been prepared herein. As shown in Figure 2-8, total employment within the Township is expected to increase from 3,900 in 2021 to 8,100 in 2051, representing an increase of 4,200 jobs or a growth rate of 2.5% annually.[1] The Township's employment activity rate is anticipated to continue to increase from 42% in 2021 to 48% by 2051.[2] This steady increase is anticipated to be largely driven by local employment opportunities within the local and regional export-based employment sectors (e.g. transportation, wholesale trade, construction, small-scale manufacturing and agri-business) as well as population-related employment sectors such as retail, accommodation and food, professional, scientific and technical services and health care. Forecast job growth is also anticipated to be accommodated through home occupations, home-based businesses and off-site employment.

Figure 2-8
Township of Cavan Monaghan
Historical and Forecast Employment Forecast, 2006 to 2051

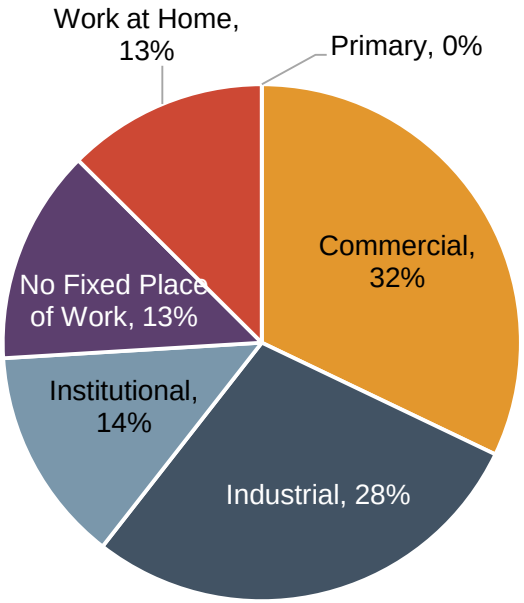


Note: Numbers have been rounded.
Source: 2001 to 2016 from Statistics Canada place of work data including work at home and no fixed place of work. Forecast by Watson & Associates Economists Ltd., 2022.

[1] Watson & Associates Economists Ltd. has assumed 8,140 jobs in Cavan Monaghan by 2051 and the Peterborough M.C.R. has assumed 7,440. This increase is largely driven by increased outlook in rural areas, compared to the Peterborough County M.C.R. allocation to Cavan Monaghan.
[2] An activity rate is the ratio of jobs to population.

Figure 2-9 displays the share of growth by employment sector during the 2021 to 2051 forecast period. Land-based commercial, industrial and institutional employment sectors are anticipated to account for approximately 74% of employment growth over the forecast period. No fixed place of work and work at home employment categories are forecast to comprise the remaining 26% of employment growth.[1] The primary sector (i.e. agriculture and other resource-based employment) has not experienced employment growth by usual place of work from 2006 to 2016 and this trend is anticipated to continue over the forecast period. Notwithstanding this trend, agricultural-related economic development activity is anticipated within the Township's rural areas over the long-term planning horizon. To accommodate future growth in the agricultural sector, there is a need to facilitate new development, as well as the expansion of existing businesses that support the agricultural economy.

Figure 2-9
Township of Cavan Monaghan
Share of Employment Growth, 2021 to 2051



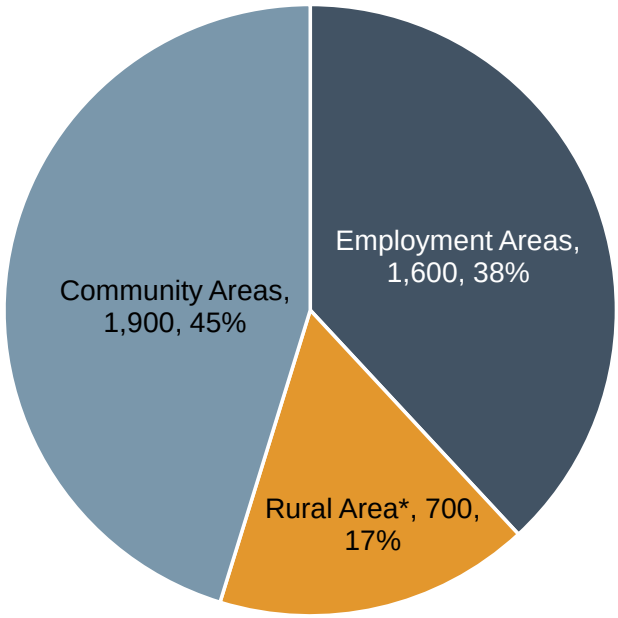
Source: Forecast by Watson & Associates Economists Ltd., 2022.

[1] No fixed place of work employment represents persons who do not go from home to the same workplace location at the beginning of each shift. Such persons include building and landscape contractors, travelling salespersons, independent truck drivers, etc.

2.4.2.1 Employment Growth Allocations in the Millbrook Urban Settlement Area, 2021 to 2051

As summarized in Figure 2-10, Employment Areas in the Township are forecast to accommodate approximately 1,600 employees over the 2021 to 2051 period. This represents approximately 38% of the Township's total employment growth over the period. It is assumed that 80% of the Township-wide industrial employment growth and 28% of the Township's commercial/population-related employment will be accommodated in Urban Employment Areas. It is further assumed that 48% of the Township's institutional employment growth will occur in Employment Areas. Additional details can be found in Appendix B.

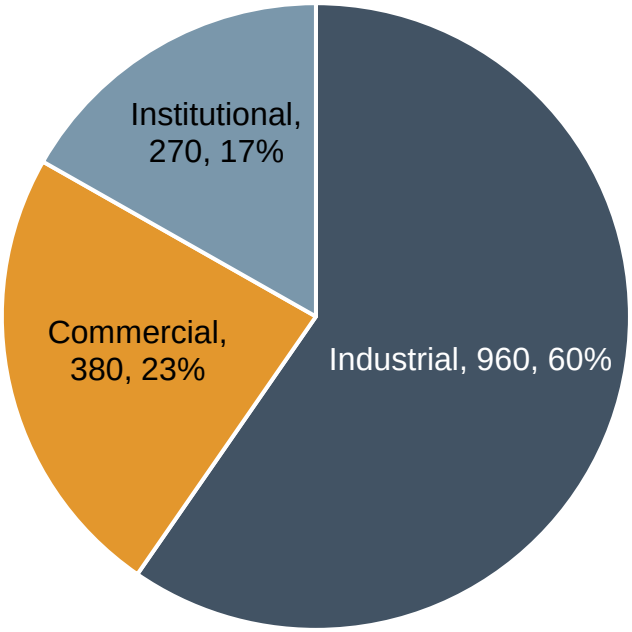
Figure 2-10
Township of Cavan Monaghan
Employment Growth Distribution by Location, 2021 to 2051



Note: Numbers may not add precisely due to rounding.
* The Rural Employment Areas surrounding Peterborough Airport are considered part of the Rural Area.
Source: Watson & Associates Economists Ltd., 2022.

Figure 2-11 summarizes the share of forecast employment growth in Employment Areas by sector between 2021 and 2051. The industrial sector represents the greatest share of the forecast employment growth in Employment Areas, followed by commercial/ population-related and institutional employment growth.

Figure 2-11
Township of Cavan Monaghan
Forecast Employment Growth on Employment Lands by Employment Sector,
2021 to 2051



Note: Numbers may not add precisely due to rounding.
Source: Watson & Associates Economists Ltd., 2022

2.4.3 Township of Cavan Monaghan Employment Area Urban Land Needs, 2051

Figure 2-12 summarizes forecast demand for Urban Employment Areas from 2021 to 2051. Key observations include the following:

- The Township of Cavan Monaghan G.M.S., 2020 identified an average employment density of 25 jobs per net ha on urban employment lands. Through further review and re-evaluation, it was determined that an average employment density of 30 jobs per ha (12 jobs per acres) is appropriate over the long-term forecast period.[1]
- Over the planning horizon, an estimated 10% of the total employment growth in Employment Areas is expected to be accommodated through intensification. It is anticipated that most of this intensification will be accommodated through infill,

[1] The Peterborough County M.C.R. identifies an employment density of 20 jobs per net ha, which includes both rural and urban employment lands in Cavan Monaghan.

redevelopment and expansion of existing developed Employment Areas in the Millbrook Urban Settlement Area.

- Over the planning horizon, urban land demand in Employment Areas is forecast to total 48 net ha (119 net acres) or 74 gross ha (183 gross acres).
- As previously discussed, the Township has a vacant designated Employment Area land supply of 40 gross ha (99 gross acres). As summarized in Figure 2-12, the demand for Employment Areas over the next 30 years exceeds the supply of vacant Employment Areas lands.
- To accommodate forecast employment growth on Urban Employment Areas to the year 2051, 34 ha (84 acres) of additional designated Urban Employment Areas will be required.
- The Township should pursue adding more designated Urban Employment Areas to the current Millbrook Urban Settlement Area.

Figure 2-12
Township of Cavan Monaghan Forecast Urban Land Demand in Employment Areas, 2021 to 2051

Item	Calculation	Result
Total Employment Forecast on Urban Employment Lands	A	1,605
Intensification on Employment Lands[1]	B = A * 10%	161
Total Employment on Employment Lands Adjusted for Intensification	C = A - B	1,445
Employment Density (Jobs per net hectare)	D	30
Total Urban Employment Area Land Demand (net ha)	E = C / D	48.2
Total Urban Employment Area Land Demand (gross ha)[2]	F	74.1
Total Urban Employment Area Land Supply	G	40.0
Total Urban Employment Area Land Needs	**H = F – G**	**34.1**

[1] Assumes 10% of employment will be accommodated through intensification.
[2] Assumes a gross-to-net ratio of 65%.
Source: Watson & Associates Economists Ltd., 2022.

Chapter 3
Location Options for Future Urban Expansion and Policy Recommendations

3. Location Options for Future Urban Expansion and Policy Recommendations

3.1 Introduction

Building on the residential and non-residential land needs established in Chapter 2, this chapter summarizes the proposed Settlement Area Boundary Expansion (S.A.B.E.) for the Millbrook Urban Settlement Area. As part of this process, consideration has been given to developing an urban land use structure that provides for a contiguous supply of designated Community Area and Employment Area lands over the long-term planning horizon. Location options regarding future Community Area and Employment Area expansion within the current Millbrook Urban have been assessed and evaluated considering connectivity and compatibility to designated land uses, development phasing, municipal servicing and local site attributes influencing real estate market demand. In accordance with this review, the conversion of the Township's existing urban Employment Areas to a non-employment use is recommended.

3.2 Urban Employment Area Conversions

Changes to the designation of a site currently designated as “Urban Employment” to allow for uses not permitted for that designation, including residential, mixed-use and specific commercial uses, is considered an Employment Area land conversion. The conversion of Employment Area lands generally occurs during the M.C.R. process as there is a need to understand the broader impacts of the conversion under the policy framework of the Growth Plan, 2019, the P.P.S., 2020, as well as regional and local site-specific considerations. As part of this G.M.S., several Employment Area conversions have been reviewed and evaluated.[1] Based on this review, a series of recommendations have been made with respect to all the designated lands within the current Millbrook Urban Employment Area.

[1] This review and evaluation process has been conducted for municipalities across Ontario and has been successfully defended at the Ontario Land Tribunal. Refer to subsections 2.2.5.9 and 2.2.5.10 of the Growth Plan, 2019.

3.2.1 Policy Context

The Growth Plan, 2019 and the P.P.S, 2020 provide a framework for assessing the conversion of lands within Employment Areas. The following briefly summarizes the Growth Plan, 2019 policies in regard to Employment Area conversions (Policies 2.2.5.9 and 2.2.5.10).

Within an M.C.R.:

- Conversions of Employment Areas to non-employment uses may be permitted only through an M.C.R., where it is demonstrated that:
    - there is a need for the conversion;
    - the lands are not required over the horizon of this Plan for the employment purposes for which they are designated;
    - the municipality will maintain sufficient employment lands to accommodate forecast employment growth to the horizon of this Plan;
    - the proposed uses would not adversely affect the overall viability of the Employment Area or the achievement of the minimum intensification and density targets in this Plan, as well as the other policies of this Plan; and
    - there are existing or planned infrastructure and public service facilities to accommodate the proposed uses.

Outside an M.C.R.:

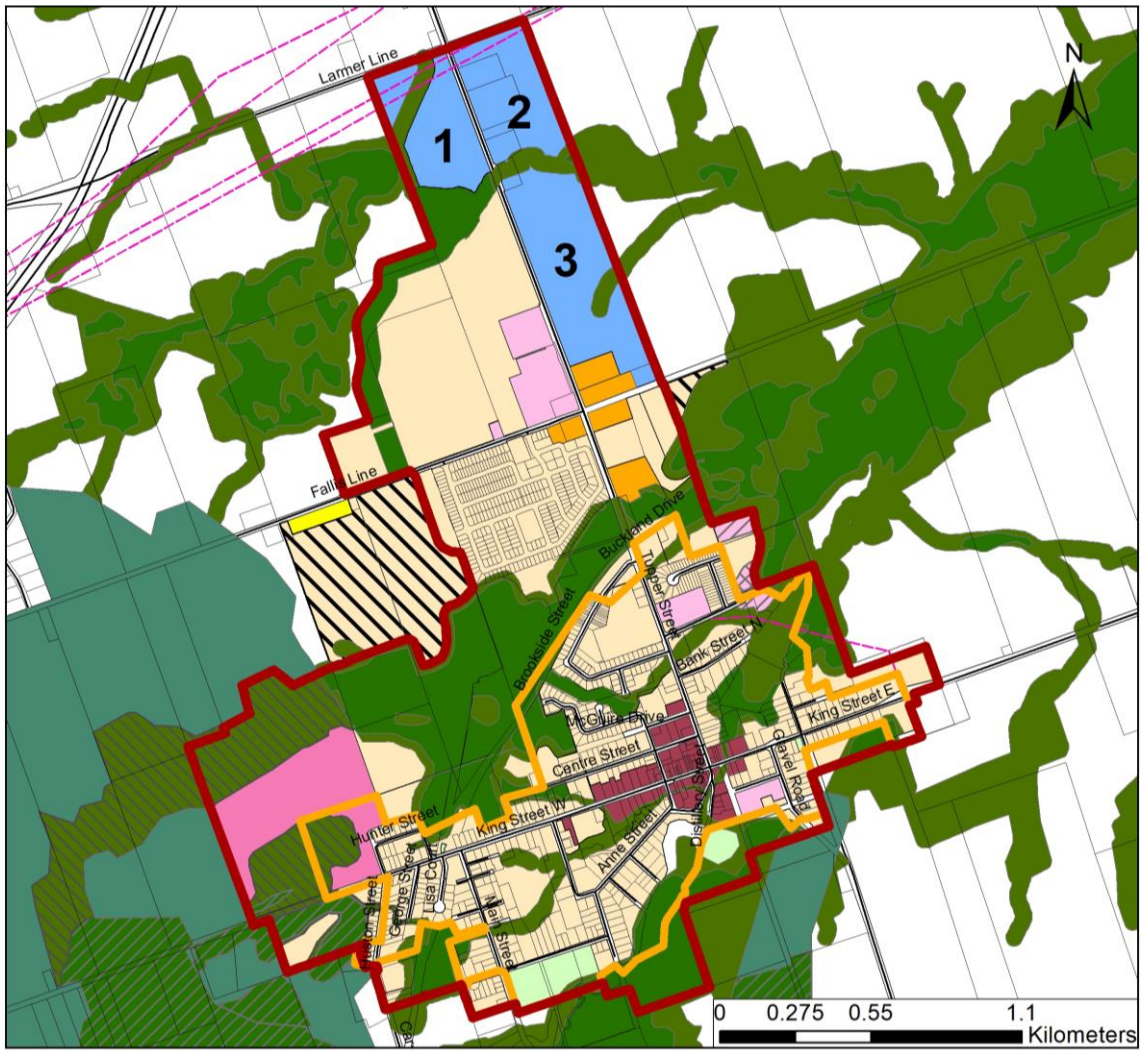
- Lands within an existing Employment Area may be converted to non-employment uses outside a municipally initiated M.C.R. (until the next M.C.R) where certain criterion can be met:
    - there is a need for the conversion;
    - the proposed uses would not adversely affect the overall viability of the Employment Area or the achievement of the minimum intensification and density targets in this Plan, as well as the other policies of this Plan;
    - there are existing or planned infrastructure and public service facilities to accommodate the proposed uses;
    - the conversion must maintain a “significant number” of jobs on the subject lands through the establishment of a development criteria; and
    - the site must not be a part of a provincially significant employment zone.

Subsection 2.2.5.11 of the Growth Plan, 2019 further states that any change to an O.P. to permit new or expanded opportunities for major retail in an Employment Area may only occur in accordance with Policy 2.2.5.9 or Policy 2.2.5.10.

3.2.2 Evaluation of Employment Area Conversions

The existing Urban Employment Areas within Millbrook have been reviewed with Township staff on a site-by-site basis to determine if potential conversions are appropriate and justified from a planning and economic development perspective. This review examined three subject sites, which are located in the north of the existing Millbrook Settlement Area boundary. Figure 3-1 identifies these lands as designated Urban Employment Areas.

Figure 3-1
Township of Cavan Monaghan
Official Plan – Schedule A-1



Legend

- Millbrook Settlement Area Boundary
- Millbrook Built Boundary
- Utility_Line
- Parcel Fabric
- Residential Approved through M.Z.O.
- Mixed-Use Commercial Approved through M.Z.O.

Land Use description

- Agricultural
- Community Commercial
- Community Core
- Institutional
- Institutional Special Policy Area # 1
- Institutional Special Policy Area # 2
- Millbrook Special Development Area
- Mineral Aggregate Extractive
- Natural Core Area
- Natural Linkage Area
- ORM - Natural Core Area
- ORM - Natural Linkage Area
- ORM - Prime Agricultural
- Parks & Open Space
- Residential
- Urban Employment Area

Watson & Associates ECONOMISTS LTD.

All sites identified in Figure 3-1 were subject to a detailed evaluation to assess the merits for conversion based on a broad range of evaluation criteria as outlined below. This evaluation has been conducted within the framework of the P.P.S., 2020, section 1.3.2.4., which states:

> "Planning authorities may permit conversion of lands within *employment areas* to non-employment uses through a comprehensive review, only where it has been demonstrated that the land is not required for employment purposes over the long term and that there is a need for the conversion."

Figure 3-2
Township of Cavan Monaghan
Details of Sites under Conversion Pressure

Site Number	OP Designation / Zoning	Current Use of Site	Total Site Area (ha)
Site 1	Urban Employment Area	Vacant	11.5
Site 2	Urban Employment Area	Partially Vacant	13.3
Site 3	Urban Employment Area	Vacant	21.8

Source: Derived from GIS (geographic information system) data received from the Township of Cavan Monaghan by Watson & Associates Economists Ltd., 2022.

The sites identified in Figure 3-2 were subject to a detailed evaluation to assess the merits for conversion based on a broad range of evaluation criteria as outlined below. This evaluation has been conducted within the framework of the P.P.S., 2020, subsection 1.3.2.4., which states:

> "Planning authorities may permit conversion of lands within *employment areas* to non-employment uses through a comprehensive review, only where it has been demonstrated that the land is not required for employment purposes over the long term and that there is a need for the conversion."

In addition to the above policy, subsection 1.3.2.5 of the P.P.S., 2020 states:

"Notwithstanding policy 1.3.2.4, and until the official plan review or update in policy 1.3.2.4 is undertaken and completed, lands within existing *employment areas* may be converted to a designation that permits non-employment uses provided the area has not been identified as provincially significant through provincial plan exercise or as regionally significant by a regional economic corporation working together with affected upper and single-tier municipalities and subject to the following:

a) There is an identified need for the conversion and the land is not required for employment purposes over the long term;

b) The proposed uses would not adversely affect the overall viability of the *employment area*; and

c) Existing or planned *infrastructure* and *public service facilities* are available to accommodate the proposed uses."

Each potential conversion site was further reviewed against a series of localized evaluation criteria to determine its merits for conversion from a site-specific perspective. These criteria are informed by a broader series of principles for approaching the evaluation of employment conversions. Details regarding the principles can be found in Appendix C.

The localized criteria consider land use and real estate market factors related to location, size, configuration of the site as well as compatibility and continuity with surrounding urban lands uses. The localized criteria are intended to provide further insight with respect to the quality of the subject sites in additional to the broader urban land needs assessment required by the P.P.S., 2020. It is recommended that the enhanced evaluation framework should be used by the Township, in conjunction with the Cavan Monaghan O.P., in reviewing Employment Area conversion applications or other candidate Employment Areas for conversion to non-employment uses on both vacant and developed Employment Area sites. A summary of the evaluation under the P.P.S., 2020 as well as the localized criteria is provided for each of the employment conversion sites as shown in Figure 3-3 and Figure 3-4. Additional details regarding the site-specific evaluation against the conversion criteria can be found in Appendix C.

Figure 3-3
Township of Cavan Monaghan
Planning and Economic Development Evaluation Criteria – Candidate Employment Area Conversion Sites

	Criteria	Description
A	P.P.S (Provincial Criteria)	There is an identified need for the conversion and the land is not required for employment purposes over the long term.
B	P.P.S (Provincial Criteria)	The proposed uses would not adversely affect the overall viability of the Employment Area.
C	P.P.S (Provincial Criteria)	Existing or planned *infrastructure* and *public service facilities* are available to accommodate the proposed uses.
D	Location (Localized Criteria)	The site is not located in proximity to major transportation corridors (e.g., highways, goods movement network, cross-jurisdictional connections) and Goods Movement infrastructure (e.g., airports, intermodal yards, and rail).
E	Access (Localized Criteria)	The site does not offer direct access to major transportation corridors (e.g., highways, goods movement network, cross-jurisdictional connections) and Goods Movement infrastructure (e.g., airports, intermodal yards, and rail).
F	Employment Area Configuration (Localized Criteria)	The site is located outside or on the fringe of an assembly of Employment Areas.
G	Site Configuration (Localized Criteria)	The site offers limited market supply potential for Employment Area development due to size, configuration, access, physical conditions, servicing constraints, etc.
H	Land Use (Localized Criteria)	The proposed conversion to non-employment uses is compatible with surrounding land use permissions and potential land use conflicts could be mitigated.
I	Supply (Localized Criteria)	The conversion of the proposed site to non-employment uses would not compromise the overall supply of large Employment Area sites for the Township.
J	Jobs (Localized Criteria)	The conversion request demonstrates total job yield of the site can be maintained or improved.

Figure 3-4
Township of Cavan Monaghan
Summary of Planning and Economic Evaluation Results for Conversion Sites

Site Name	A	B	C	D	E	F	G	H	I	J	Recommendation
Site 1											Recommended for Conversion
Site 2											Recommended for Conversion
Site 3											Recommended for Conversion

Meets Criteria Does Not Meet Criteria

Source: Watson & Associates Economists Ltd., 2022.

The following is a summary of the results of employment conversion analysis for the three subject sites:

- Considering the proximity of the subject lands to existing or planned Community Area uses, the recommendation to convert the subject Employment Area lands to a Community Area use is appropriate and maintains a contiguous structure of urban designated lands.
- There is a need for both additional urban Employment Area land and additional urban Community Area land to 2051. The recommendation to convert the subject urban Employment Area lands to Community Area provides a more compatible urban land use structure for the Millbrook Settlement Area over the long-term as the community continues to expand and urbanize. The recommended Employment Area conversions along with the corresponding proposed Community Area and Employment S.A.B.E. (refer to section 3.3.) satisfy the long-term urban land needs identified for the Millbrook Urban Settlement Area.
- The conversion of the existing Urban Employment Area lands will allow for a more contiguous urban form within the future Millbrook settlement area, with a natural extension of Community Area uses. The southern portion of Site 3 is recommended to be designated for major retail/commercial uses to promote employment growth within the settlement area consistent with the approved M.Z.O. for a portion of these lands. This southern commercial portion would be a

logical extension of the surrounding lands designated as Community Commercial.

- The recommended Employment Area conversions and proposed Employment Area S.A.B.E. location options also capitalize on the local physical attributes of the future Millbrook Settlement Area expansion with respect to transportation connectivity as well as highway access and exposure. This is discussed in the following section.

3.3 Location Options for Future Urban Expansion

Location options for future urban land expansion in Millbrook to the year 2051 were discussed with Township staff and the Township's Technical Advisory Committee (T.A.C.), comprising senior staff and members of Township Council. This chapter presents the overall approach that was undertaken and describes the location options and recommendations to accommodate growth.

3.3.1 Approach to Assessing Location Options for Urban Land Expansion

The following considerations were explored while working with staff and the T.A.C. to assess broad location options for S.A.B.E. lands in Millbrook:

- The presence of environmental and development constraints and their impact on developable potential;
- Servicing options, with the benefit that the Township's water and wastewater allocation policies are being updated during the time of the study (further discussed in section 3.2.3);
- Urban structure, contiguousness, and land use compatibility between existing and planned S.A.B.E. lands; and
- Local site attributes influencing market demand of proposed residential and non-residential S.A.B.E. lands.

While this report identifies broad location options for future urban expansion, additional technical studies related to land use planning, servicing, and agricultural impacts, as outlined in the Growth Plan, 2020 and 2020 P.P.S., will be required as part of the Township O.P. amendment process.

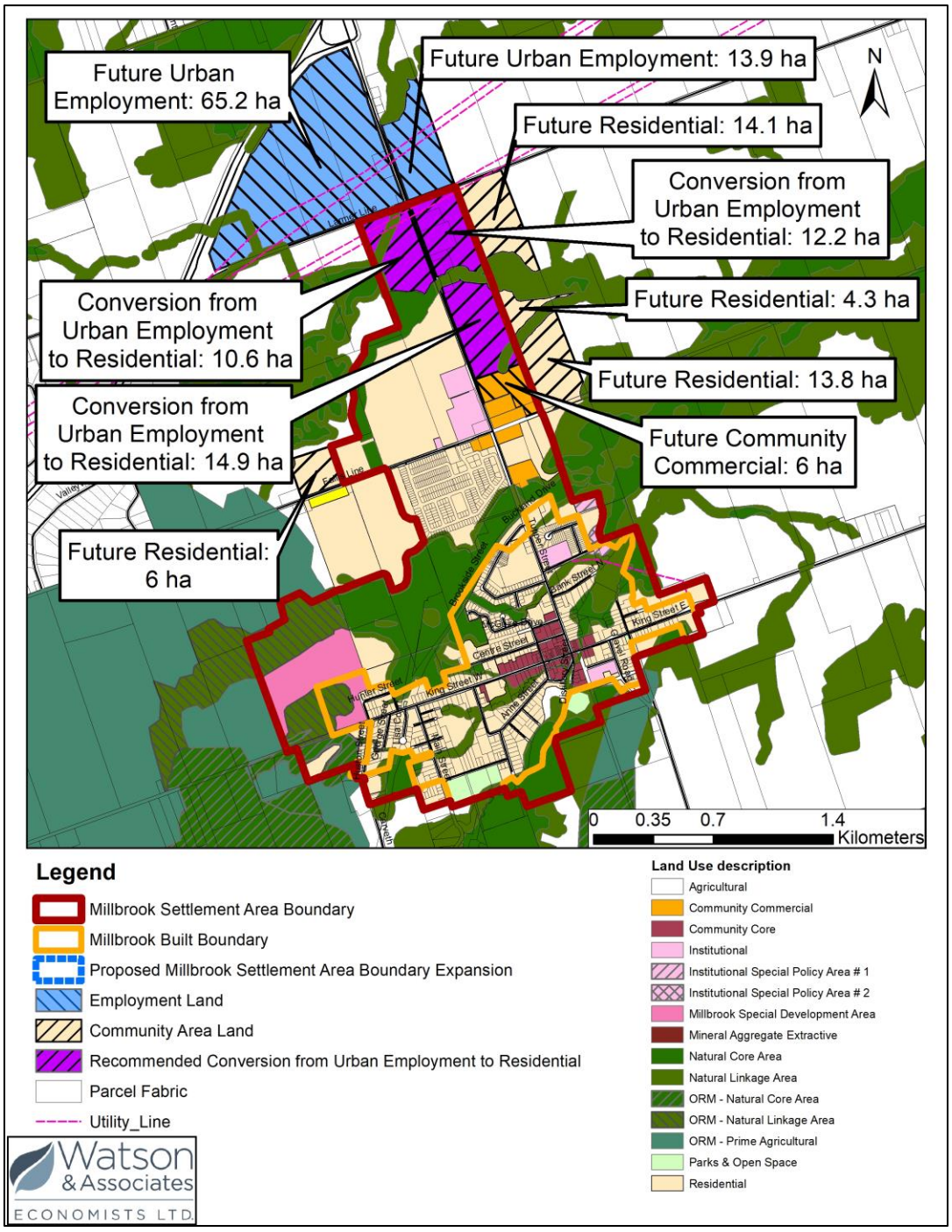
3.3.2 Overview of Broad Location Options for Future Urban Expansion

In collaboration with Township staff and the T.A.C., this study recommends that all existing Urban Employment Area lands within the current Millbrook Settlement Area be converted to a Community Area use. As previously discussed in section 3.1, the conversion of these Employment Area lands would allow for the development of a more cohesive, new Urban Employment Area that benefits from direct access and exposure along Highway 115 and County Road 10. Prospective Urban Employment Areas in this location would offer sites with direct exposure and access to highways, adequate buffers from residential uses, with large parcels which could attract and accommodate a wide range of industrial type uses over the long term.

The conversion of the existing Urban Employment Lands to Community Area uses would further allow for the contiguous expansion of residential and commercial uses within the current Millbrook Urban Settlement Area, limiting potential land use compatibility conflicts associated with residential and non-residential uses. The proposed Community Area S.A.B.E. lands would be buffered from the proposed Urban Employment Area S.A.B.E. by Larmer Line. Converting the remaining vacant Urban Employment Area lands within Millbrook would allow for the extension of Community Area land directly to the east of the existing settlement area boundary to accommodate the 75 ha (185 acres) shortfall previously identified in subsection 2.3.2. A part of the 75 ha (185 acres) Community Area S.A.B.E., a Community Commercial land use designation of approximately 6 ha (15 acres) is recommended along Fallis Line, as a logical extension of the existing Community Commercial lands currently located directly to the south.

As previously discussed, it is suggested that the Township undergo additional technical studies, such as land use, servicing, fiscal and agricultural impact assessment, as outlined by the requirements of the Growth Plan, 2019 and the 2020 P.P.S. in order to fully assess impacts and determine the exact locations for future urban expansion. As a future exercise, a Secondary Plan should be undertaken by the Township to provide more specific direction to issues related to hard and soft servicing requirements, land use, transportation access, fiscal impacts, urban design guidelines and planning policy.

Figure 3-5
Township of Cavan Monaghan
Proposed Location Options for Settlement Area Boundary Expansion (S.A.B.E.)



3.3.3 Servicing Considerations for Future Urban Expansion

Township staff and the T.A.C. provided insight on existing servicing conditions and future servicing directions throughout the course of assessing these broad location options for future urban expansion. As such, the location options presented in the previous section consider servicing potential at a high level. To further inform the exact location and nature of future urban expansion to accommodate Community and Employment Land Area land needs, the Township has retained R.V. Anderson Associates Ltd., to complete a master servicing study. This will further inform servicing options and development phasing related to the recommended S.A.B.E. location options.

3.4 Policy Recommendations

Policy recommendations and strategic directions have been provided in the Township of Cavan Monaghan G.M.S., 2020. This G.M.S. update continues to reinforce and support these recommendations and directions. Building on these directions, updated policy recommendations are provided in Figure 3-6, where applicable. These recommendations and strategic directions are captured under the following themes:

- Planning for Population, Housing, and Employment Growth in the Township of Cavan Monaghan;
- Planning for Growth in Urban Employment Areas;
- Planning for Growth in Built-up Areas and Designated Greenfield Community Areas; and
- Planning for Growth in Commercial Areas.

Figure 3-6
Township of Cavan Monaghan Policy Recommendations

No.	Theme	Recommendation	Opportunities and Challenges	Recommended Actions
1	Planning for Population, Housing, and Employment Growth in the Township of Cavan Monaghan	Growth associated with the Kawartha Downs M.Z.O. is considered in addition to the Township of Cavan Monaghan growth forecast provided in the G.M.S.	According to the Growth Plan, 2019, the forecasts established in Schedule 3 are to be treated as minimum targets.	In the next Township of Cavan Monaghan Official Plan Update, examine the growth potential associated with the Kawartha Downs M.Z.O. and update the residential and non-residential forecasts accordingly.
2	Planning for Growth in Urban Employment Areas	Plan for future employment lands within the Township of Cavan Monaghan.	The Township has an insufficient supply of urban Employment Area lands to accommodate forecast urban land demand in Employment Areas to the year 2051.	Designate an additional 34.1 ha (84 acres) of urban Employment Area lands within Millbrook. In accordance with the land needs and findings of the Peterborough County M.C.R., lands outside Millbrook are not required to accommodate urban Employment Area lands to 2051.

No.	Theme	Recommendation	Opportunities and Challenges	Recommended Actions
3	Planning for Growth in Built-up Areas and Designated Greenfield Community Areas	Plan for future Community Area lands within Millbrook in the Township of Cavan Monaghan.	The Township has an insufficient supply of Community Area lands to accommodate forecast land demand to the year 2051.	Designate an additional 74.7 ha (185 acres) of Community Area lands within Millbrook. Of this total, designate 6 ha (15 acres) of land for Community Commercial uses in addition to the provincial M.Z.O. In accordance with the land needs and findings of the Peterborough County M.C.R., lands outside Millbrook are not required to accommodate Community Area lands to 2051.
4	Planning for Growth in Built-up Areas and Designated Greenfield Community Areas	Acknowledge the current Millbrook B.U.A. capacity of 215 residential units, while implementing a policy goal to achieve a rate of 15% intensification to the current planning horizon and beyond.	The Township's O.P. sets an intensification target that 20% of the Township's housing needs to the year 2031 shall be provided through residential infilling, intensification, and redevelopment within the B.U.A. The intensification target should be updated in accordance with the Peterborough M.C.R.	The Township should continue to examine opportunities within the B.U.A. to accommodate a greater share of residential units. It is recommended that the Township amend its intensification assumption with a policy objective which strives to achieve 15% of residential unit growth within the B.U.A.

No.	Theme	Recommendation	Opportunities and Challenges	Recommended Actions
5	Planning for Growth in Built-up Areas and Designated Greenfield Community Areas	Plan to meet a minimum D.G.A. target of 60 people and jobs per ha.	The Cavan Monaghan O.P. does not currently establish a D.G.A. density target. Policy 2.2.7.2 b) of the Growth Plan requires that the County of Peterborough achieve a minimum density target that is not less than 40 residents and jobs combined per ha within the horizon of this Plan.	In accordance with the Peterborough M.C.R. and the findings of this G.M.S., the Township establish a minimum D.G.A. density target of 60 people and jobs per ha.
6	Planning for Growth in Commercial Areas	Protect the designated commercial land supply for long-term needs.	Commercial uses in Millbrook may take longer to develop than residential uses. Given the significant demand for residential uses, the Township should ensure that commercial areas are protected from conversion pressures for residential uses.	Require a market impact study to be completed for applications that involve a reduction in commercial lands.
7	Planning for Population, Housing, and Employment Growth in the Township of	The Township should conduct additional studies associated with the subsections 1.1.3.8 c, d and e of the P.P.S., 2020, as well as the outstanding	The land use, servicing implications and financial impacts surrounding the recommended land use structure within Millbrook are not fully understood at this time.	Once the Millbrook Master Servicing Study has been completed, the Township should conduct a fiscal impact and development feasibility study to assess the servicing and financial implications associated with anticipated urban development within the Millbrook Urban

No.	Theme	Recommendation	Opportunities and Challenges	Recommended Actions
	Cavan Monaghan	requirements of subsection 2.2.8 of the Growth Plan, 2019.		Settlement Area over the 2051 planning horizon. Other appropriate studies in accordance with subsections 1.1.3.8 c, d and e of the P.P.S., 2020, as well as outstanding requirements of subsection 2.2.8 of the Growth Plan, 2019 should also be conducted.
8	Planning for Population, Housing, and Employment Growth in the Township of Cavan Monaghan	The Township should consider embedding annual growth monitoring tools to track residential and non-residential development patterns against the prescribed growth forecasts.	Without monitoring growth on an annual basis, the Township does not fully comprehend the short-term development pressures and associated land requirements/ constraints over time.	The Township should acquire tools that facilitate the annual tracking of population, housing, and employment development activity, as well as development densities. Such tools would better inform the Township on how growth is tracking against anticipated development patterns and, for example, how future growth of the Kawartha Downs M.Z.O. influences this growth trajectory.

Chapter 4
Conclusions and Next Steps

4. Conclusion and Next Steps

This study provides an update to the Township of Cavan Monaghan G.M.S., 2020.[1] The population, housing, and employment forecast has been extended to 2051 from the previous 2041 time horizon, in accordance with the planning horizon established in the Growth Plan, 2019. Reflective of this 2051 update, this addendum report has provided an updated commercial, residential, and employment urban land needs analysis in accordance with the Peterborough M.C.R. Accordingly, the updated land needs for Millbrook to 2051 are as follows:

- The commercial land needs for Millbrook have been updated from 5 ha (12 acres) in 2041, to 6 ha (15 acres) by 2051;
- The residential land needs for Millbrook have been updated from 45 ha (111 acres) in 2041, to 75 ha (185 acres) by 2051; and
- The Employment Area land needs for Millbrook have been updated from 29 ha (72 acres) in 2041, to 34 ha (84 acres) by 2051.

This addendum report demonstrates that there is no need for urban land expansion in Cavan Monaghan beyond that identified for the Millbrook Settlement Area Boundary expansion. Future work should be conducted through the Township's O.P. Review exercise to formalize the Millbrook Settlement Area Boundary expansion. Furthermore, the Township should consider embedding monitoring tools to track population, housing, and employment growth and urban land absorption within the Township against the longer-term growth forecasts and urban land needs established in this report.

[1] The results of this addendum report do not reassess land needs across the Township's Rural Areas.

Appendices

Appendix A
Residential Growth Forecast, 2021 to 2051

Appendix A: Residential Growth Forecast, 2021 to 2051

Figure A-1 summarizes the population growth forecast for the Township from 2021 to 2051 in five-year increments.

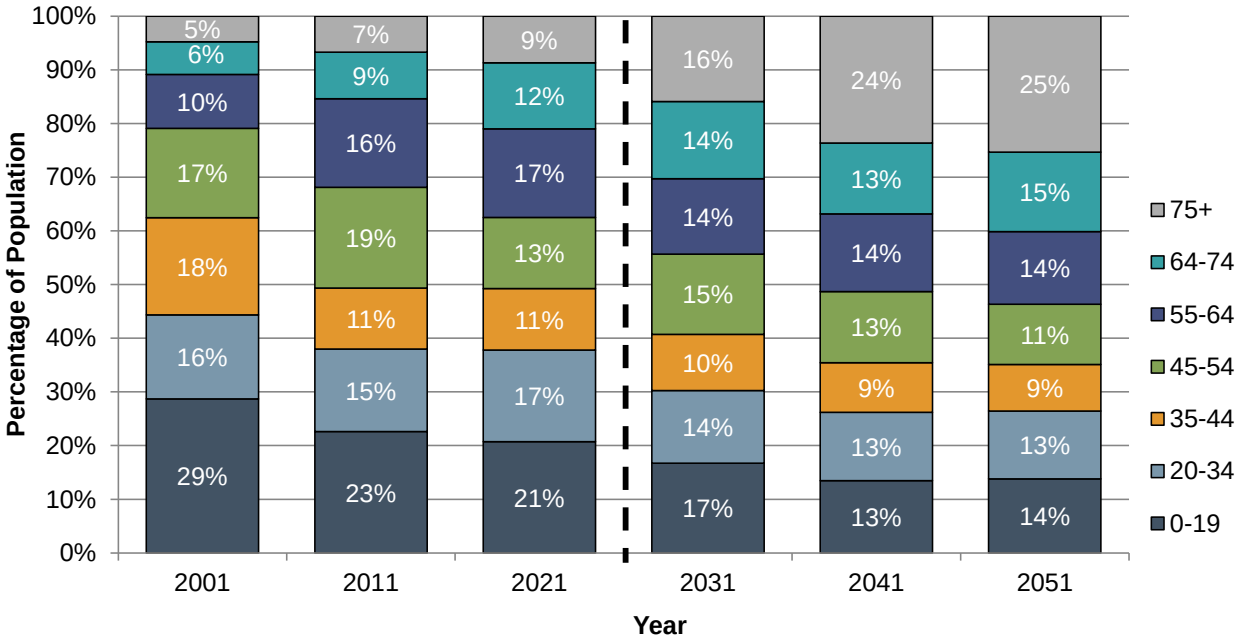
Figure A-1
Township of Cavan Monaghan
Population Growth Forecast, 2021 to 2051

Year		Population (Including Census Undercount)[1]	Population (Excluding Census Undercount)
Historical	*Mid-2001*	8,780	8,455
	Mid-2006	9,130	8,835
	Mid-2011	8,820	8,605
	Mid-2016	9,020	8,815
	Mid-2021	10,260	10,016
Forecast	*Mid-2026*	11,890	11,600
	Mid-2031	13,200	12,890
	Mid-2036	14,390	14,040
	Mid-2041	15,510	15,130
	Mid-2046	16,550	16,150
	Mid-2051	17,570	17,140
Incremental	Mid-2001 to Mid-2006	350	380
	Mid-2006 to Mid-2011	-310	-230
	Mid-2011 to Mid-2016	200	210
	Mid-2016 to Mid-2021	1,240	1,201
	Mid-2021 to Mid-2026	1,630	1,584
	Mid-2021 to Mid-2031	2,940	2,874
	Mid-2021 to Mid-2036	4,130	4,024
	Mid-2021 to Mid-2041	5,250	5,114
	Mid-2021 to Mid-2046	6,290	6,134
	Mid-2021 to Mid-2051	7,310	7,124

[1] Population figures have been rounded and include the net Census undercount
Source: Data from 2001 to 2021 from Statistics Canada Demography Division by Watson & Associates Economists Ltd., 2022.

Figure A-2 summarizes population growth by major age group over the 2021 to 2051 forecast period for the Township. The percentage of the Township's largest age cohort, 20 to 54 years of age, is forecast to decline from 41% in 2021 to 33% in 2051. Over the forecast period, the Township's population base is expected to age significantly. Most notably, the percentage of population in the 75+ age group (older seniors) is forecast to almost triple over the forecast period from 9% in 2021 to 25% in 2051. The aging of the population and declining population growth resulting from natural increase (i.e. births less deaths) is anticipated to place downward pressure on the rate of population and labour force growth within the Township, and subsequently the regional labour force participation rate. Similar to the Province as a whole, the Township will increasingly become more reliant on net migration as a source of population growth as a result of these demographic conditions.

Figure A-2
Township of Cavan Monaghan
Population by Age Forecast, 2021 to 2051

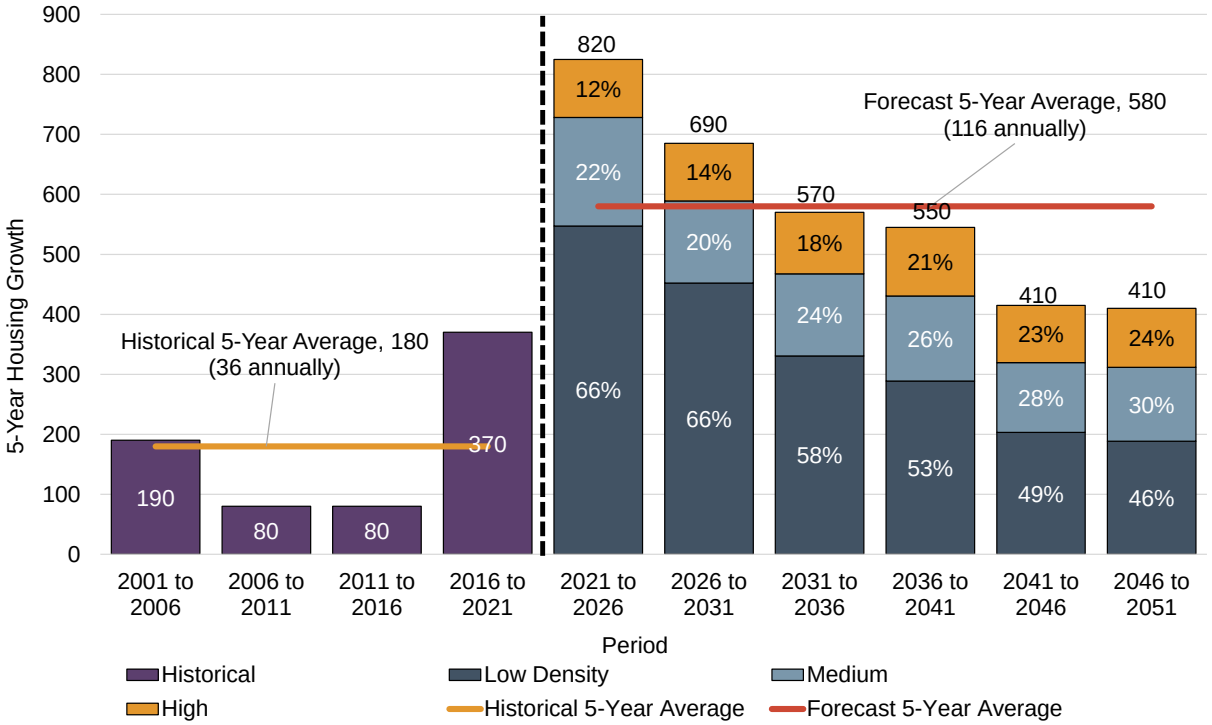


Source: Population forecast by age derived from 2001 to 2021 Statistics Canada Census by Watson & Associates Economists Ltd. 2021 to 2051 population forecast by age prepared by Watson & Associates Economists Ltd., 2022. Note: Population includes net Census undercount estimated at 2.5%.

Figure A-3 summarizes the Township's household forecast from 2021 to 2051 in five-year growth increments and by structure type. Housing trends between 2001 and 2021 are also provided for historical context. Key observations include the following:

- Housing activity over the past five years has been significantly higher than the 2001 to 2016 historical period.
- Between 2021 and 2051, forecast housing development is expected to average 116 units annually compared to an historical average of 36 units annually over the past 20 years.
- Consistent with projected population trends over the longer term, the rate of future housing growth is expected to steadily slow over the forecast period.
- Over the 2021 to 2051 forecast period, new housing is forecast to comprise 58% low-density (singles and semi-detached), 24% medium-density (townhouses) and 18% high-density (apartments) units. A modest increase in the share of medium- and high-density housing forms is anticipated, largely driven by the aging of the population, potential opportunities in some settlement areas for communal servicing, and continued upward pressure on local housing prices.

Figure A-3
Township of Cavan Monaghan
Five-Year Incremental Housing Growth – Historical and Forecast, 2001 to 2051

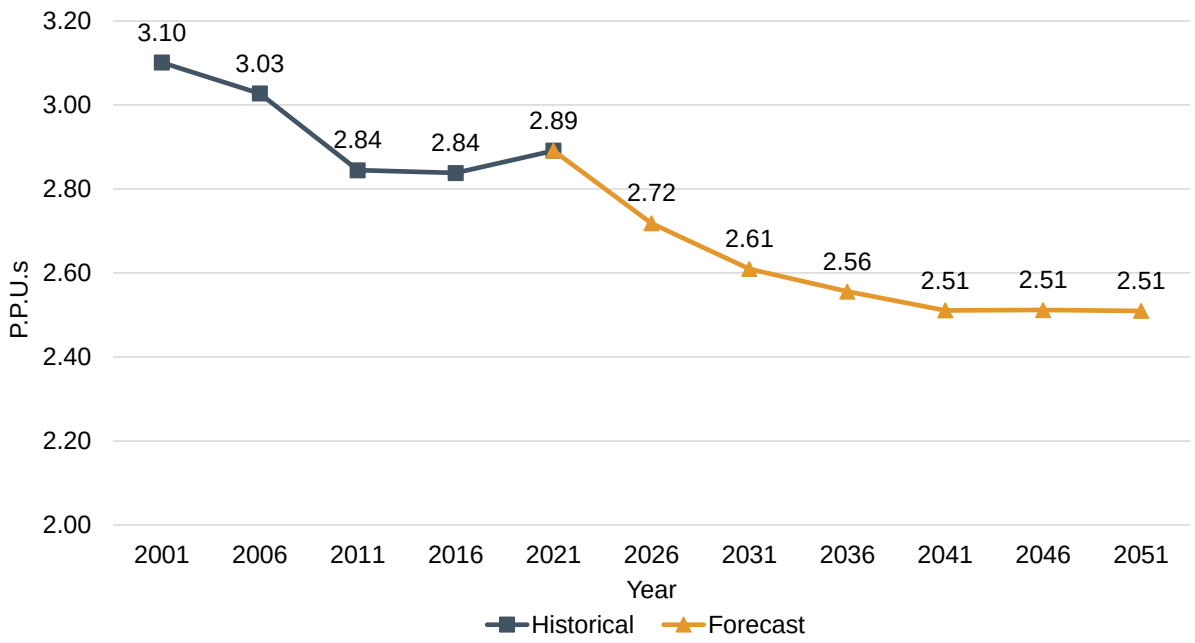


Source: Statistics Canada Census, 2001 to 2021. Forecast by Watson & Associates Economists Ltd., 2022.

Figure A-4 summarizes anticipated trends in long-term housing occupancy, or average persons per unit (P.P.U.), for the Township within the 2021 to 2051 forecast period. Key observations include the following:

- Between 2001 and 2021, the average P.P.U. for the Township declined from 3.10 to 2.89.
- Over the forecast period, the average P.P.U. for the Township is anticipated to continue to gradually decline from 2.89 in 2021 to 2.51 in 2051, largely as a result of the aging of the Township's population and a gradual shift towards medium- and high-density forms of housing.

Figure A-4
Township of Cavan Monaghan
Historical and Forecast Persons Per Unit (P.P.U.), 2001 to 2051



Note: Figure includes net Census undercount estimated at 2.5%.
Source: Statistics Canada Census and Demography Division, 2001 to 2021. Forecast (2021 to 2051) estimated by Watson & Associates Economists Ltd., 2022.

Figure A-5 displays the housing and population growth in Cavan Monaghan by policy area, in five-year increments. As shown, the Millbrook D.G.A. is anticipated to accommodate the largest share of population and housing growth over the next 30 years.

Figure A-5
Township of Cavan Monaghan Residential Growth Allocation by Policy Area in Five-Year Increments, 2021 to 2051

Development Location	Timing	Single & Semi-Detached	Multiples[1]	Apartments[2]	Total Residential Units	Gross Population In New Units	Existing Unit Population Change	Net Population Increase, Excluding Institutional	Institutional Population	Net Population Including Institutional
Millbrook Built-Up Area	2021 to 2026	11	17	15	43	89	-113	-24	16	-8
	2021 to 2031	20	31	30	81	166	-213	-47	30	-17
	2021 to 2036	26	44	46	116	234	-267	-33	42	9
	2021 to 2041	32	57	64	153	306	-316	-10	53	43
	2021 to 2046	36	68	79	183	362	-310	52	64	116
	2021 to 2051	40	80	95	215	423	-306	117	74	191
Millbrook Designated Greenfield Area	2021 to 2026	481	164	82	727	1,859	-12	1,847	21	1,867
	2021 to 2031	879	287	163	1,329	3,391	-23	3,368	36	3,404
	2021 to 2036	1,171	411	249	1,831	4,623	-29	4,593	51	4,644
	2021 to 2041	1,425	539	346	2,310	5,770	-35	5,735	65	5,800
	2021 to 2046	1,604	645	426	2,675	6,626	-35	6,591	78	6,669
	2021 to 2051	1,770	756	509	3,034	7,458	-34	7,424	91	7,515
Rural	2021 to 2026	55	-	-	55	160	-430	-270	0	-270
	2021 to 2031	100	-	-	100	292	-810	-518	0	-518
	2021 to 2036	133	-	-	133	389	-1,017	-628	0	-628
	2021 to 2041	162	-	-	162	473	-1,202	-729	0	-729
	2021 to 2046	182	-	-	182	533	-1,182	-649	0	-649
	2021 to 2051	201	-	-	201	588	-1,166	-578	0	-578
Cavan Monaghan	2021 to 2026	547	181	97	825	2,108	-556	1,552	37	1,589
	2021 to 2031	999	318	193	1,510	3,850	-1,047	2,803	66	2,869
	2021 to 2036	1,330	455	295	2,080	5,246	-1,313	3,933	93	4,026
	2021 to 2041	1,619	596	410	2,625	6,548	-1,553	4,996	118	5,114
	2021 to 2046	1,822	713	505	3,040	7,521	-1,527	5,994	142	6,136
	2021 to 2051	2,011	836	604	3,450	8,468	-1,506	6,963	165	7,128

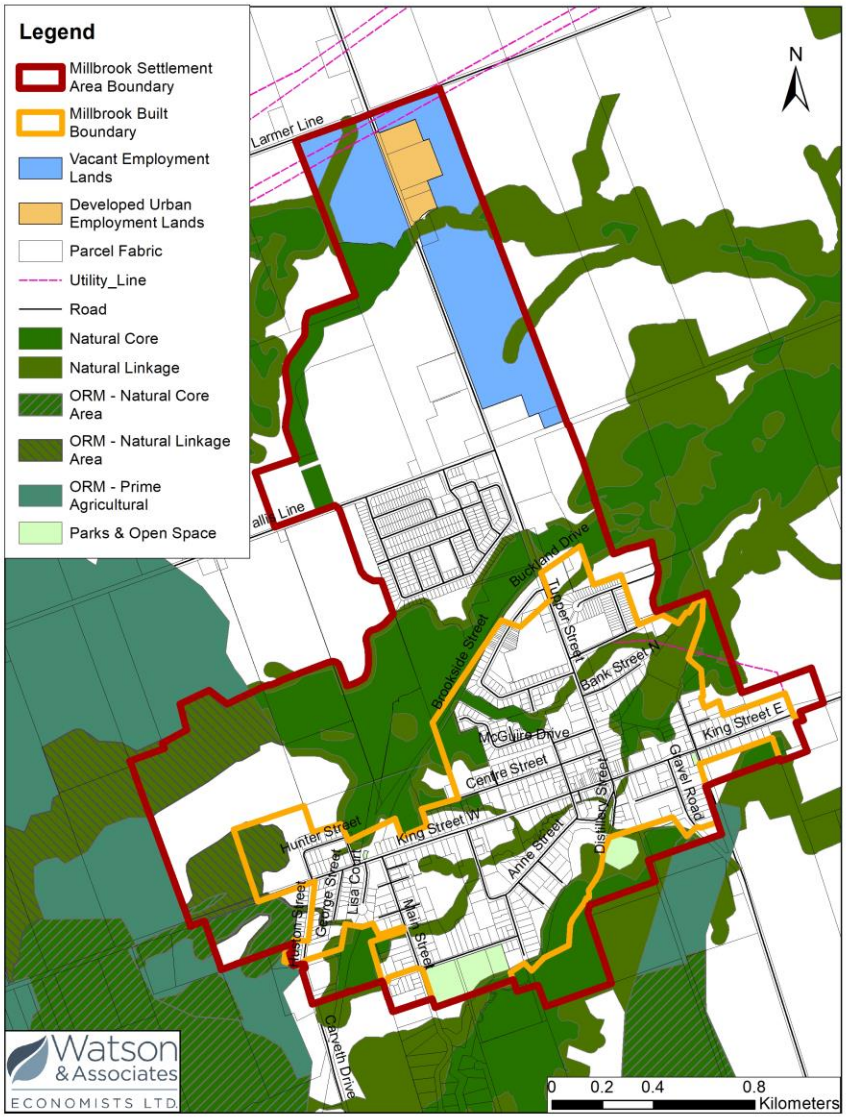
[1] Includes townhouses and apartments in duplexes.
[2] Includes accessory apartments, bachelor, 1-bedroom and 2-bedroom+ apartments.
Source: Watson & Associates Economists Ltd., 2022.

Appendix B
Supplemental Urban Employment Area Supply and Forecast Information

Appendix B: Supplemental Urban Employment Area Supply and Forecast Information

Figure B-1 summarizes the Township of Cavan Monaghan's vacant Urban Employment Area land supply within the Millbrook Settlement Area. There are 40.2 ha (99 acres) of Urban Employment Area land vacant and 6.2 ha (15 acres) developed.

Figure B-1
Map of the Vacant and Developed Urban Employment Land Supply in Millbrook, May 2022



Forecast Employment on Urban Employment Lands, 2021 to 2051

summarizes forecast employment on Urban Employment Areas over the short-, medium- and long-term forecast periods, based on the assumed allocation of growth on Employment Areas assigned by primary, industrial, commercial and institutional sector. Over the 2021 to 2051 period, the Township's Urban Employment Lands are anticipated to accommodate approximately 46% of the Township's total employment growth, resulting in approximately 1,600 jobs.

Figure B-2 displays the allocation of usual place of work employment by major sector, between 2021 and 2051. Figure B-3 summarizes forecast employment on Urban Employment Areas over the short-, medium- and long-term forecast periods, based on the assumed allocation of growth on Employment Areas assigned by primary, industrial, commercial and institutional sector. Over the 2021 to 2051 period, the Township's Urban Employment Lands are anticipated to accommodate approximately 46% of the Township's total employment growth, resulting in approximately 1,600 jobs.

Figure B-2
Employment Growth on Urban Employment Lands, 2021 to 2051

Employment Sector	Employment Growth, 2021 to 2051				Percent of Township Employment Growth on Employment Lands, 2021 to 2051
	Township Wide	Urban Employment Areas	Community Areas	Rural Areas	
Primary	0	0	0	0	
Industrial	1,194	955	0	239	80%
Commercial/Population-Related	1,349	378	870	101	28%
Institutional	567	272	284	11	48%
N.F.P.O.W.	564	0	254	310	0%
Total Employment Growth	**3,673**	**1,605**	**1,408**	**660**	**44%**
Share of Total Employment Growth		**44%**	**38%**	**18%**	

Note: Work at Home Employment is not included.
Source: Watson & Associates Economists Ltd., 2022.

Figure B-3
Employment Growth on Urban Employment Lands, 2021 to 2051

Employment by I.C.I.	Employment Growth by Sector						Employment Growth on Urban Employment Lands						Percent on Employment Lands
	2021-2026	2021-2031	2021-2036	2021-2041	2021-2046	2021-2051	2021-2026	2021-2031	2021-2036	2021-2041	2021-2046	2021-2051	
Primary	-	-	-	-	-	-	-	-	-	-	-	-	0%
Work at Home	81	153	225	267	326	382	-	-	-	-	-	-	0%
Industrial	360	556	770	952	1,066	1,194	288	445	616	762	853	955	80%
Commercial	344	568	838	1,058	1,207	1,349	96	159	235	296	338	378	28%
Institutional	164	252	359	432	504	567	79	121	172	207	242	272	48%
Total	**949**	**1,529**	**2,192**	**2,709**	**3,103**	**3,492**	**463**	**725**	**1,023**	**1,265**	**1,433**	**1,605**	**46%**

Note: Numbers may not add precisely due to rounding
Source: Watson & Associates Economists Ltd., 2022.

Appendix C
Evaluation of Urban Employment Area Conversions

Appendix C: Evaluation of Urban Employment Area Conversions

Principles for Employment Area Conversions in Cavan Monaghan

It is important to recognize that structural changes in the broader economy continue to alter the nature of economic activities in Employment Areas, which in turn impacts the built form and character of these lands. It is also important to address that tomorrow's industries will have siting, space and built-form requirements that are fundamentally different from traditional industrial sites which exist today. This may include requirements related to broad infrastructure, transit access, energy efficiency, building and urban design standards, eco-industrial design principles and labour force access. Site configurations and the integration of uses are also evolving particularly in prestige Employment Areas which often integrate operations combining office, research and development, warehousing and logistics, and on-site manufacturing in a "campus-style" setting.

Due to potential negative impacts resulting from the inappropriate conversion of Employment Areas, it is recognized that there is a need to plan for optimal and marketable employment uses within the Township. It is also recognized that under some circumstances an Employment Area conversion may be justified for planning and economic development reasons provided such decisions are made through using a systematic approach and methodology as set out herein.

Given the importance of planning for and protecting Employment Areas, a series of principles, as listed below, for approaching the evaluation of employment conversions has been established. These principles are meant to provide further rationale to guide local decision making regarding the conversion of Employment Areas. Again, it is noted that these principles were developed using policy directions and guidance from the Provincial Policy Statement (P.P.S.), 2020, A Place to Grow: Growth Plan for the Greater Golden Horseshoe, 2019 (the Growth Plan, 2019), as well as reference to best practices in protecting, planning, and developing employment lands. In total, seven broad Employment Area principles have been established for the Township and are summarized below.

1) **Protect Employment Areas in proximity to major transportation corridors and Goods Movement infrastructure to ensure businesses have access to a transportation network that safely and efficiently moves goods and services.**

In contrast to other urban land uses (e.g., commercial, mixed-use and residential areas), Employment Areas provide the opportunity to accommodate industrial sectors that cannot be easily accommodated in other areas of the County. The Growth Plan, 2019 and the P.P.S., 2020 contain policies that protect Employment Areas in proximity to major Goods Movement facilities and corridors that require those locations. To continue to be competitive and attractive to a broad range of industrial and commercial sectors, municipalities need to ensure that medium- to large-scale vacant sites have good access to trade corridors near major highway interchanges as well as other major Goods Movement and transportation facilities such as ports, rail yards, intermodal facilities, and airports.

2) **The configuration, location, and contiguous nature of Employment Areas need to be maintained in order to prevent fragmentation and provide business-supportive environments.**

Preserving the overall configuration, location, and contiguous nature of Employment Areas ensures the Township and County can continue to be competitive and attractive to a broad range of industrial and commercial sectors. Potential risks of Employment Areas becoming fragmented over time are to be anticipated and mitigated. Encouraging contiguous Employment Areas of critical mass supports market choice and municipal competitiveness, while also enabling businesses to establish relationships and synergies, thereby developing strong business-supportive environments to various scales (i.e., locally and regionally).

3) **Provide a variety of Employment Area lands in order to improve market supply potential and regional attractiveness to a variety of employment sectors and business sizes.**

The Township and County needs to ensure a sufficient supply of municipally serviced (and/or serviceable) lands within Employment Areas, by location, access, site size, zoning, tenure, etc., are offered. This will ensure a sufficient market choice of designated Employment Areas is provided to accommodate a variety of employment

sectors and business sizes. The Township and County will need to ensure that they offer a diverse supply of employment land supply, including a range of parcel sizes.

4) Retain the employment and job potential of Employment Areas.

Recommended Employment Area conversions should maintain or improve the County's overall ratio of jobs to population (i.e., employment activity rate), without undermining the functionality and competitive position of existing Employment Areas.

5) Align Township and County interests and policies related to Employment Areas in order to support achieving municipal goals and mandates of planning for, protecting, and preserving Employment Areas.

It is recognized that there are various municipal interests and policies related to Employment Areas that speak to planning for, protecting, and preserving Employment Areas. As such, the purpose of this principle is for the Township to align as best as possible to County mandates, goals, and objectives, for example, included in the County's Strategic Plan, O.P., Secondary Plans, etc., which provide insight related to the County's vision towards planning for, protecting, and preserving Employment Areas.

6) Limit and/or mitigate land use incompatibilities where necessary.

The Growth Plan, 2019 and the P.P.S., 2020 contain policies that speak to avoiding or limiting land use incompatibilities with sensitive land uses (e.g., residential uses, education and health care facilities, day care centres). Employment Areas may also accommodate industries that require adequate separation from sensitive land uses.

7) Site-Specific Conversion Criteria Evaluation.

As shown in Figure 3-4 of the report, all existing urban Employment Area sites have scored the same on the evaluation criteria matrix. Accordingly, Figure C-1 evaluates the conversion of all three Employment Areas sites.

Figure C-1
Township of Cavan Monaghan
Planning and Economic Development Evaluation Results for Conversion: Sites 1 to 3

Meets Criteria Does Not Meet Criteria

		Comments	
Provincial Policy Statement 1.3.2.5	A	Based on employment land demand in Cavan Monaghan, there is a need for residential, commercial, and urban employment land over the planning horizon. The amount of urban employment land required over the long term is being provided through the designation of urban employment lands to the	
	B	The proposed conversion to non-employment use would not adversely affect the overall viability of the Employment Area. The urban employment lands within Millbrook are in close proximity to residential uses. Converting the lands and designating urban employment lands closer to the highway would result in a more cohesive and contiguous land use structure.	
	C	Existing or planned infrastructure and public service facilities are available to accommodate the proposed uses.	
Localized Criteria	D	The sites are in close proximity to Highway 115; however, they do not offer direct access to major transportation corridors.	
	E		
	F	The three sites compose the entirety of the existing Millbrook Urban Employment Area. All sites could be considered as a fringe location.	
	G	The sites offer limited market supply potential for Employment Areas. Their location in close proximity to residential uses acts as a barrier to attracting prospective businesses. Moving the employment lands north towards Highway 115 mitigates these constraints an improves marketability.	
	H	Conversion to residential and commercial uses is more compatible than the existing Urban Employment Area designation. Accommodating residential and commercial development would remove the existing land use conflicts and create a more cohesive urban structure within the Millbrook Settlement Area.	
	I	While converting these lands would remove a supply of large Employment Area sites within the Township, the designation of new urban Employment Area lands to the north as part of a Millbrook Settlement Area boundary expansion would provide Cavan Monaghan with a supply of larger sites.	
	J	Designating a portion of these lands for Community Commercial development would result in jobs being maintained within the existing settlement area boundary. Relocating the Urban Employment lands closer to Highway 115 would result in the number of jobs being maintained or increased.	
Recommended for Conversion			

Source: Watson & Associates Economists Ltd., 2022.

APPENDIX 2

HYDROGEOLOGICAL REPORT, THURBER ENGINEERING



THURBER ENGINEERING LTD.

To: Rika Law, P.Eng., PMP
R.V. Anderson Associates Ltd.

October 2, 2023

From: Paul Coulson, P.Geo.
David Hill, P.Eng., P.Geo.

Thurber File No.: 29561

TECHNICAL MEMORANDUM
DESKTOP HYDROGEOLOGICAL STUDY
WATER AND WASTEWATER SERVICING STUDY
TOWNSHIP OF CAVAN MONAGHAN, ONTARIO

Thurber Engineering Limited (Thurber) has been retained by R.V. Anderson Associates Ltd. (RVA) to conduct a desktop study in support of the Township of Cavan Monaghan Water and Wastewater Master Servicing Study.

It is a condition of this memorandum that Thurber's performance of its professional services is subject to the attached Statement of Limitations and Conditions.

1. OBJECTIVES

The objectives of the Desktop Hydrogeological Study are to provide a review of existing hydrogeological information and to provide future hydrogeological considerations for the following potential needs:

- Additional water supply, whether from the existing Millbrook Wellfield or elsewhere.
- Construction of new infrastructure related to additional water supply and servicing.

2. SITE DESCRIPTION

The project Study Area is shown on Figure 1 and includes the entire Township of Cavan Monaghan, located in the County of Peterborough in Southern Ontario, southwest of the City of Peterborough. The Study Area is generally bounded by Hogsback Road, Hillview Drive, Dranoel Road, Glamorgan Road, and Cold Springs Camp Road to the west, the City of Pickering, the Onotobee River, and Highway 28 to the east, Hayes Line and Parkhill Road West to the north, and Line Road 1 to the south. Within the Study Area, four project Focus Areas are discussed with more detail within this report and are shown on Figure 1.

The four project Focus Areas are as follows:

1. Syer Line and Highway 115: Highway interchange. The Township is interested in the potential to provide water service to this area.

2. 1256 Syer Line: Property on north side of Syer Line, east of Syer Line and Highway 115. Based on satellite imagery, a dirt laneway, farmhouse and barn, wooded areas, watercourses, and wetlands are present on the property. The Township is interested in the potential to provide water service to this area.
3. Millbrook Wastewater Treatment Plant: The Millbrook Wastewater Treatment Plant was replaced in 2015 and is rated for 2,521 m^3/day with a peak capacity of 8,242 m^3/day.
4. Millbrook Wellfield: The Millbrook Water Treatment Plant sources its water on-site from three drilled wells located in a tight cluster on the north side of Highway 21 east of Queen Street (Millbrook Wellfield), which are reported to have high quality and quantity of water. The Permit to Take Water (PTTW) was amended in 2018 to allow removal of up to 3,000 m^3/day.

3. REVIEW OF AVAILABLE INFORMATION

3.1 Site Physiographic, Geologic, and Hydrogeologic Settings

The Study Area is situated within two physiographic regions generally known as the Peterborough Drumlin Field and the Oak Ridges Moraine (Chapman and Putnam, 1984). A physiographic region map of the Study Area is shown on Figure 2. The Peterborough Drumlin Field covers the majority of the Study Area and is comprised of a rolling till plain with a belt of approximately 3,000 drumlins in addition to many drumlinoid hills and surface flutings of the till sheet. The drumlins are generally comprised of highly calcareous till. Near the southern border with the Oak Ridges Moraine the till is somewhat sandier. The Oak Ridges Moraine physiographic region is located in the southwestern corner of the Study Area. The surface topography of the Oak Ridges Moraine is described as hilly with knob-and-basin relief. In general, the hills of the Oak Ridges Moraine are sandy or gravelly; however, in some areas the hills are comprised of till above the sand. The predominant physiographic landforms found within the Study Area include sand plains, till plains (drumlinized), clay plains, drumlins, kame moraines, eskers, and peat and muck. The project Focus Areas are all within the Peterborough Drumlin Field physiographic region and are all situated on sand plains.

According to available geologic mapping obtained from the Ontario Geological Survey (OGS), the surface geology of the Study Area is predominantly underlain by stone-poor, carbonate-derived silty to sandy till. Other significant areas within the Study Area include massive to well laminated fine-textured glaciolacustrine deposits, glaciolacustrine-derived silty to clayey till, organic deposits (peat, muck, and marl), modern alluvial deposits, older alluvial deposits, ice contact stratified deposits, glaciofluvial deposits, foreshore-basinal deposits, and eolian deposits. The mapped surficial geology of the Study Area is illustrated on Figure 3.

The Millbrook Wastewater Treatment Plant is situated on modern alluvial deposits. The Millbrook Wellfield is situated on older alluvial deposits. The Focus Area at Syer Line and Highway 115 is located on massive to well laminated fine-textured glaciolacustrine deposits and foreshore-

basinal deposits. The Focus Area at 1256 Syer Line is underlain by massive to well laminated fine-textured glaciolacustrine deposits, modern alluvial deposits, and foreshore-basinal deposits.

Quaternary mapping obtained from the OGS shows that the Study Area is predominantly underlain by predominantly sandy silt to silt matrix undifferentiated till, commonly rich in clasts and often high in total matrix carbonate content. Smaller areas of the Study Area are underlain by glaciofluvial ice contact deposits, glaciomarine deposits, glaciofluvial outwash deposits, and organic deposits. The Millbrook Wastewater Treatment Plant and 1256 Syer Line Focus Areas are underlain by glaciomarine deposits composed of sand, gravelly sand, and gravel nearshore and beach deposits. The focus area at Syer line and Highway 115 is underlain by sandy silt to silt matrix undifferentiated till, commonly rich in clasts and often high in total matrix carbonate content. The Millbrook Wellfield is underlain by glaciofluvial ice-contact deposits composed of gravel and sand with minor till, including esker, kame, end moraine, ice-marginal delta and subaqueous fan deposits.

Published bedrock mapping obtained from the OGS indicates that the Study Area is underlain by limestone of the Lindsay and Verulam Formations. The four Focus Areas are situated within the Lindsay Formation area. The mapped bedrock geology of the Study Area is illustrated on Figure 4.

The majority of the Study Area and specifically the project Focus Areas are located within the Otonabee Region Watershed, which falls under the jurisdiction of the Otonabee Region Conservation Authority (ORCA). The regional topography is undulating with small hills and valleys. Generally, the topography slopes easterly toward the Otonabee River, which eventually drains into Rice Lake. The Otonabee River flows generally in a southerly direction from Katchewanooka Lake, approximately 16 km to the northeast of the Study Area, to Rice Lake, approximately 2.3 km southeast of the Study Area. The Otonabee River flows directly adjacent to the east boarder of the Study Area from Highway 115 to Whitfield Road. Tributaries of the Otonabee River transect the Study Area, including Baxter Creek, Cavan Creek, Jackson Creek, and Squirrel Creek. Jackson Creek is connected to Best's Pond, which is located north of Highway 9 and west of Best Road. The tributaries flow in a general easterly direction towards the Otonabee River.

Groundwater flow is interpreted to follow the existing topography, with the Study Area draining generally easterly to the Otonabee River.

3.2 Previous Investigations and Reports

Existing available subsurface information was compiled for the Study Area from previous investigations carried out by others. The following reports were reviewed in the assessment of site conditions for the Study Area and the findings are discussed in the following paragraphs.

THURBER

A. Geotechnical Investigation Report. Millbrook Waste Water Treatment Plant Expansion. Prepared by Geo-Logic Inc. Dated May 2014.

The above report details a geotechnical investigation at the Millbrook Wastewater Treatment Plant for the reconstruction that occurred in 2015. In general terms, the encountered stratigraphy consisted of topsoil or asphalt occasionally overlying fill, overlying till, then silty clay, and then sandy silt. Water levels were measured from monitoring wells installed in four boreholes. Groundwater level depths in the monitoring wells ranged from 1.6 m below grade to 1.0 m above grade, suggesting that artesian groundwater conditions exist at the site. Slug tests were carried out in two of the monitoring wells and yielded hydraulic conductivity values of 8×10^{-8} m/s for silty clay and 1×10^{-7} m/s for silty clay/sandy silt. One groundwater sample was collected from a monitoring well and analyzed in comparison to Peterborough Storm Sewer Use By-Law Limits. The groundwater quality sample generally met the limits with the expectation of total suspended solids (TSS).

B. Review and Comments on Existing Reports. Prepared by R, Betcher, dated March 2016.

The above report summarizes and details multiple reports that discuss the geological and hydrogeological conditions of the Millbrook Area. Key findings from the report include details about the Millbrook Wellfield:

- The average daily withdrawal rate of the Millbrook Wellfield at the time the report was written in March 2016 was approximately 540 m^3/day.
- The original two wells at the wellfield were installed in 1976 and were screened in a confined artesian aquifer.
- The static water level in the wells was approximately 4.9 m above ground.
- A pumping test was conducted at each well at a constant pumping rate of 1,360 L/min for 24 hours for both tests.
- The water taking limit of the original PTTW was for 2,060 m^3/day.
- A third well was installed at the Millbrook Wellfield in 2002 and a 24-hour pumping test was conducted at the new well at constant rate of 1,590 L/min. One of the older wells was operating at a rate of 1,450 L/min for part of the test. The PTTW was revised to allow removal of up to 3,000 m^3/day.
- An assessment was carried out by Golder in 2009 to determine if 5,000 m^3/day of water taking was feasible. Golder conducted a 72-hour pumping test at the wellfield at a pumping rate of approximately 5,060 m^3/day.

Golder provided the opinion that the Millbrook Wellfield could sustainably provide a maximum daily rate of 5,374 m^3/day.

- The water quality information from the wells did not suggest any significant drinking water concerns.
- The wellfield has operated sustainably for the past 40 years and water levels in the pumping wells have not been observed to decline over this time period.

C. 2018 Groundwater Monitoring Report. Former Millbrook Correctional Centre. Millbrook, Ontario. Prepared by Cole Engineering Group Ltd., Dated 2019.

The above report discusses a groundwater monitoring program conducted in 2018 for a site located at the former Millbrook correctional centre, located at 706 County Road, Millbrook, Ontario. The site is located approximately 400-450 m northwest from the Millbrook Wellfield. Previous groundwater monitoring investigations were conducted on-site in 2015, 2016, and 2017. The groundwater onsite is impacted by tetrachloroethylene, also known as perchloroethylene (PCE), a volatile organic compound (VOC). Based on groundwater level measurements, the inferred groundwater flow direction generally follows topography and flows in a general easterly direction. The report indicates three distinct hydrostratigraphic layers. Layer 1 is an unconfined water table aquifer comprised of recent deposits and the Oak Ridges Aquifer Complex. Layer 2 is the upper Newmarket Till consisting of clay and is considered an aquitard. Layer 3 is the Inter-Newmarket Sediment (INS) Aquifer comprised of sand and gravel. The INS Aquifer supplies the Millbrook Wellfield.

Groundwater samples were collected and analyzed for VOCs. Groundwater quality samples collected from Layer 1 had a maximum concentration of PCE of 1.3 µg/L, which is below the applicable Ontario Regulation 153/04 Table 2 Site Condition Standard of 1.6 µg/L. Within Layer 2, no samples detected concentrations of PCE. Within Layer 3 (the INS Aquifer), at the downgradient site boundary, concentrations of PCE in groundwater samples exceeded Table 2 standards with a maximum concentration of PCE of 3.1 µg/L. Based on previous years of monitoring, the authors of the report interpreted that the PCE concentration appears to be trending lower. Groundwater samples collected did not exceed Table 2 standards for any of the other tested parameters.

D. Hydrogeological Monitoring Report (2019) – Town of Millbrook, Township of Cavan Monaghan. Prepared by Cambium Inc. Dated July 15, 2020.

The above report details water level monitoring in and around the Millbrook Wellfield to quantify the drawdown caused by pumping in the municipal wells. Water level measurements were taken from March 2017 to September 2019. The

monitoring program included a private well survey, monitoring of select residential and public wells using datalogger pressure transducers, and monitoring of surface water monitoring using two stream staff gauges. The findings indicated daily drawdown events from the wellfield temporarily influenced two nearby private water wells located at 710 Carveth Drive and 29 Huston Street; however, the influence was not considered significant because the water level in both wells recovered shortly following cessation of pumping. Long-term water level monitoring suggests that pumping is not causing permanent lowering of the water table.

E. Hydrogeologic Assessment Report – Proposed Residential Development, 825 Fallis Line, Millbrook, Ontario. Prepared by GHD dated October 25, 2017.

The above report details a hydrogeological investigation at a site at 825 Fallis Line. The site is approximately 1 km northwest of the Millbrook Wastewater Treatment Plant, 0.7 km north of the Millbrook Wellfield, 2.9 km south of the Focus Area at Syer Line and Highway 115, and 4.2 km southwest of the Focus Area at 1256 Syer Line.

The investigation consisted of drilling 12 boreholes, ranging from 6.1 to 6.6 m. Monitoring wells were installed in three boreholes and piezometers were installed in two boreholes. One hydraulic conductivity test (slug test) was conducted. Constant head permeameter tests were completed at two locations to test infiltration rates. A door-to-door water well survey and water balance were conducted as part of the investigation.

In general terms, the encountered stratigraphy consisted of topsoil overlying very loose to very dense till, ranging in composition from silty sand to silty clay. Dense to very dense silty sand was encountered below the till in some boreholes. Water level depths in the monitoring wells and piezometers were from 0.9 to 4.8 m. The slug test indicated the hydraulic conductivity of the till to be in the order of 10^{-7} m/s. Infiltration testing results suggested an infiltration rate of 12 to 50 mm/hour for the shallow unsaturated soils.

F. Geotechnical Investigation Report. Water Tower and Servicing. Millbrook, Ontario. Prepared by Geo-Logic Inc. Dated October 2014.

The above report details a geotechnical investigation located at 988 Country Road 10, in Millbrook Ontario, for proposed construction of a water tower and servicing. In general terms, the stratigraphy at the site consisted of topsoil overlying silty sand till in the area of the proposed water tower and asphalt over fill, overlying gravelly sand to sandy silt till within the proposed servicing areas. Groundwater was measured in open boreholes at depths ranging from approximately 1.1 to 2.6 m.

G. Millbrook Drinking Water System 2019-20 Compliance Inspection Report 1-L4FKG, prepared by the Ministry of Environment, Conservation and Parks.

The above report details conditions at the three wells at the Millbrook Wellfield. The report describes the three wells as 250 mm diameter, 30 metre steel cased drilled wells, with stainless steel screens located at depths of approximately 26 to 30.5 m, installed within the clay and gravel overburden material. All three wells are described as flowing artesian wells. Review of pumping records indicated that the maximum daily taking was 949.04 m^3, which is approximately 32% of the rated capacity. Water quality samples were collected for parameters listed under Ontario Regulation 169/03: Ontario Drinking Water Quality Standards (ODWS) and no tested parameters exceeded the ODWS.

3.3 Well Records and Existing Permits

A search of the Ministry of the Environment, Conservation and Parks (MECP) well records database conducted for the Study Area in December 2020 returned a total of 2,959 well records, of which 2,558 were listed as water supply, 121 as abandoned, two as dewatering, 65 as monitoring and test holes, 61 as observation wells, 137 as having an unknown status, and 15 as having other status.

Of the 2,959 total well records within the Study Area, 86 of the wells are located within 500 m of the project Focus Areas. Twenty well records are located within the 500 m search radius around the Focus Area of 1256 Syer Line, of which 13 were indicated as water supply, three as abandoned, two as monitoring and test holes, and two as observation wells. The average static water level found within 500 m of the Focus Area of 1256 Syer Line is 8.5 m.

Twenty-seven well records were identified within the 500 m search radius around Syer Line and Highway 115, of which 11 were indicated as water supply, one as abandoned, 10 as monitoring and test holes, four as observation wells, and one as having an unknown status. The average static water level found within 500 m of the Focus Area of Syer Line and Highway 115 is 5.2 m.

There were 39 well records within 500 m search radius of the Millbrook Wastewater Treatment Plant, with 23 listed as water supply wells, seven as abandoned, two as dewatering wells, one as a monitoring and test hole, and six as having an unknown status. Four of the well records had water levels above ground surface, ranging from 0.1 m above ground surface to 0.6 m above ground surface, suggesting groundwater under artesian pressure within this Focus Area. The average static water level found within the Focus Area of the Millbrook Wastewater Treatment Plant is 3.7 m below ground.

Within a 500 m radius of the Millbrook Wellfield, 24 well records were found. Six of the well records within 500 m of the Millbrook Wellfield Focus Area had water levels above ground surface, ranging from 4.9 to 7 m above ground surface, and the average static water level found in the wells within 500 m of the Millbrook Wellfield is 0.84 m above ground surface, suggesting groundwater is under artesian pressure within this Focus Area.

A summary of the well records within 500 m of each Focus Area is included in Tables 1 – 4 in Attachment B. The locations of the well records in the Study Area and Focus Areas are shown on Figure 5.

Well record 5119299 was found near the location of the Millbrook Wellfield. The well record details the subsurface conditions at the location of the wellfield, which consists of topsoil underlain by clay to sandy clay with stones or gravel, underlain by sand, to sand & gravel, to gravel & sand, underlain by clay. The well record indicates a well was screened from approximately 26 m to 31 m, in a gravel with some sand layer. A 24-hour pumping test was conducted at the well at approximately 1,590 litres per minute (LPM). Based on the pumping test, a pumping rate of 1,590 LPM was recommended. The well was completed on November 21, 2002. Well record 5119299 is included in Attachment B.

A search of water taking permits conducted in December 2020 identified 18 active PTTW records within the Study Area. Three active PTTW records were found at the location of the Millbrook Wellfield, all under the same permit number 7704-AW7HJF. The permit is for up to 3,000,000 litres per day, is registered under the Corporation of the Township of Cavan Monaghan, and the purpose is for water supply for municipal use. No active PTTWs were found within 500 m of the other Focus Areas. The locations of the active PTTWs in the Study Area and Focus Areas are shown on Figure 5 and are summarized in Table 5 in Attachment B.

A search of MECP's Access Environment mapping returned no Environmental Activity and Sector Registry (EASR) registrations for water taking within the Study Area.

3.4 Environmental Setting

Based on regional-scale source protection mapping, the Study Area is located in the Ontoabee-Peterborough Source Protection Area (S.P.A.). Within the Study Area, there is a wellhead protection area (WHPA) centred around the Millbrook Wellfield and extending to the west. There is a WHPA centred east of Highway 7 on the south side of Landsdowne Street West extending to the northwest and there is a WHPA Groundwater Under Direct Influence (WHPA-E) area directly overlapping and adjacent to this WHPA area. Both WHPAs are subdivided into WHPA-A, WHPA-B, WHPA-C, and WHPA-D. WHPA-A is the 100 m radius around the wellfield, WHPA-B is for a 0-2 year groundwater travel time to the well, WHPA-C is for a 2-5 year groundwater travel time to the well, and WHPA-D is for a 5-25 year groundwater travel time to the well. The location of the WHPAs is shown on Figure 6.

Based on the Oak Ridges Moraine Conservation Plan, the southwestern section of the Study Area is considered apart of the Oak Ridges Moraine (ORM) Conservation Area. The ORM regulation area is considered an environmentally sensitive geological landform and certain regulations apply for developments within the Oak Ridges Moraine Conservation Area. The Oak Ridges Moraine Conservation Act, 2001, provides more detail.

Based on a review of Ministry of Natural Resources and Forestry (MNRF) online mapping, natural features in the vicinity of the project Focus Areas include the following:

a) Otonabee River runs adjacent east of the Study Area and tributaries of the Otonabee river traverse the Study Area. Baxter Creek flows adjacent to the Millbrook Wastewater Treatment Plant along the south of the property. A tributary of Baxter Creek flows adjacent to the Millbrook Wellfield. At the location of Syer Line and Highway 115, a tributary of Cavan Creek flows adjacent to Syer Line on the north side. At 1256 Syer Line, two tributaries of Cavan Creek transect the Focus Area.

b) Multiple Areas of Natural Scientific Interest (ANSIs) are found throughout the Study Area. A provincially Significant Earth Science ANSI known as Cavan Swamp Wildlife Area is located north of Highway 5, south of Highway 9, and east of Highway 7. A Provincially Significant Life Science ANSI is located north of Hooton Drive and west of Preston Road. A provincially Significant Earth Science ANSI located east of Dranoel Road and south of Highway 7A. A provincially Significant Earth Science ANSI located at the northwestern corner of the Study Area, west of Ski Hill Road. The land adjacent to Cavan Creek throughout the Study Area is considered an ANSI. Areas in southwest of Study Area adjacent to Baxter Creek are considered ANSIs.

c) Natural Heritage Areas are located throughout the entire Study Area, generally in areas around the watercourses and wetlands. The entire area within the property at 1256 Syer Line is classified as a Natural Heritage Area. The area directly north of The Millbrook Wastewater Treatment Plant is recorded as a Natural Heritage Area. Lands adjacent to Syer Line and Highway 115 to the northeast and southwest are listed as Natural Heritage Areas.

d) Wetlands are located throughout the Study Area and are classified as Provincially Significant Wetlands (evaluated), Non-Provincially Significant Wetlands (evaluated) and Unevaluated Wetlands. Multiple wetlands are located within the property at 1256 Syer Line and are classified as Provincially Significant Wetlands (Evaluated) and unevaluated wetlands. An unevaluated wetland is directly adjacent to the north of the Millbrook Wastewater Treatment Plant. Provincially significant wetlands are present in the lands adjacent to Syer Line and Highway 115.

e) Large areas of woodlands also exist throughout the Study Area. Woodlands can be found within the property at 1256 Syer Line.

The Areas of Natural Significance within the Study Area are illustrated on Figure 6.

THURBER

4. ASSESSMENT

4.1 Water Supply

Based on available data, there is potential to increase the water taking from the pre-existing wells at the Millbrook Wellfield which are supplying the Millbrook Water Treatment Plant. Based on existing reports, the average pumping rate at the Wellfield was 540 m^3/day, which is much lower than the currently allowed water taking rate of 3,000 m^3/day. As discussed in section 2.2 above, previous reports indicate a pumping rate of 5,374 m^3/day was possible and sustainable. In addition, previous reports indicate that no long-term decrease in the groundwater table has been observed due to long-term pumping at the wellfield. It seems likely that an increase to the pumping rate would be sustainable; however, further investigation would be required. Uncertainties remain in regard to long-term sustainability of a higher flow rate, potential migration of contaminant plumes, surface water and groundwater interaction, potential impacts to private wells, and geotechnical impacts such as settlement.

Other areas of the Township may be considered for the potential to obtain groundwater for new potential water treatment plants. Based on the available background information, the sand & gravel confined aquifer known as the Inter-Newmarket Sediment Aquifer exists below the town of Millbrook that could be used as a reliable water source. A regional cross-section of the hydrostratigraphic units is presented in the above-mentioned report *2018 Groundwater Monitoring Report, Former Millbrook Correctional Centre, Millbrook, Ontario,* Prepared by Cole Engineering Group Ltd. and dated 2019. The cross-section shows the Inter-Newmarket Sediment Aquifer extending over a distance of at least 6 km along a west-east section through Millbrook. The thickness of the aquifer ranges from 50 m in the west-southwest to as thin as 2 m in the east-northeast. In the Millbrook area, the aquifer thickness ranges from approximately 24 m to 10 m. The aquifer generally dips down towards the east. Considerations for selecting a location for a new municipal well include presence of coarse-grained soils in the subsurface, proximity of potentially contaminating activities, location of recharge zones and vulnerability of recharge zones to contamination, presence of nearby private wells or water bodies which may be affected by pumping, and logistical concerns such as proximity to treatment facilities. Prior to installation and commissioning of a new municipal well, field investigations would need to be carried out at the proposed site, as further discussed in Section 4.3.

4.2 Construction Dewatering

Construction of infrastructure below grade may require dewatering if the excavation penetrates below the groundwater table. Within the construction dewatering zone of influence, potential impacts such as ground settlement, reduction in groundwater flow to groundwater users and watercourses, and other impacts must be considered. The potential impacts and potential monitoring and mitigation measures are discussed in the following sub-sections.

4.2.1 Geotechnical Impacts

Drawdown of the groundwater table during construction dewatering poses a risk of settlement of nearby structures and utilities. It is recommended that a pre-construction survey be developed by a geotechnical engineer to determine pre-construction elevations of any settlement-sensitive structures and utilities within the radius of influence and to recommend a monitoring plan during construction.

4.2.2 Impact to Surface Water and Natural Environment

The primary potential impact to surface water is from the discharge of water that is of poor quality, or from erosion caused by poorly controlled discharge flow. The Water Taking Plan and Discharge Plan in the case of an EASR registration or the Hydrogeological Study in the case of a Category 3 PTTW would identify operating conditions, monitoring requirements, and a contingency plan in terms of the taking and discharging of water. The PTTW may stipulate additional terms and conditions that must be followed.

The operational conditions may include performance criteria that need to be met, such as maintaining the water taking rate below the permitted value, and target concentrations for particular parameters in the discharge, such as a total suspended solids (TSS) limit and other parameters (e.g. PWQO limits). Discharge to land surface is typically required to be at least 30 metres from a receiving water body such as a creek.

If dewatering is required, a monitoring plan may be developed, which would recommend tasks to be completed at indicated frequencies. These may include visual inspections of the discharge location and water quality, measurements of turbidity, measurements of water quality parameters to ensure compliance with discharge requirements and recording of water taking volumes.

A contingency plan may also be developed, if dewatering is required, which would provide recommended actions, or a series of actions, to initiate when an operating condition or monitored parameter is not in compliance with the project requirements.

Reductions of flows to surface water from groundwater may also be a potential concern if the construction dewatering rate is significant and is in close proximity to a surface water body. Investigation and analysis would be required to ascertain the potential level of impact, and depending on the outcome of the analysis, monitoring and mitigation measures may be required.

4.2.3 Impact to Water Well Users

Dewatering activities may impact water well users within the radii of influence, including impacting the quality or quantity of drinking water. The magnitude of any drawdown and the relative impact is anticipated to decrease as the distance between the well and the edge of the excavation increases.

If a desktop study indicates that private wells may be located within a construction dewatering zone of influence, a door-to-door survey of private wells and a well monitoring program may be required. A door-to-door survey of private well users consists of canvassing properties near the proposed construction within the estimated dewatering radius of influence or 500 m (whichever is larger) to assess interest and participation in the well monitoring program and to confirm the location of private wells. A well monitoring program should consist of pre-construction, construction, and post-construction monitoring of the water level in private wells as well as basic water quality testing in comparison to ODWS. The results of the monitoring program would assist in verifying potential impacts on well users and provide the data required to document the effects, where permission is given by residents to monitor their wells. Remedial measures that the Township may consider for affected well users include the provision of potable water or assistance with improving or restoring well productivity.

4.2.4 Migration of Contaminants

With prolonged dewatering activities there can be potential for inorganic or organic chemical compounds present within the dewatering radius of influence to migrate and to enter open excavations where sufficient flow rate and time permit. Based on the background review, it is known there is VOC-impacted groundwater at the location of the former Millbrook Correctional Centre. Further identification of potential contaminants to groundwater would require further study, such as a contaminant overview study.

The quality of groundwater discharge should be monitored for changes in water quality. Visual inspection of the discharge for excessive sediment or contamination such as chemical product or sheen should be conducted. Collection of discharge samples compared to discharge criteria should be conducted prior to and during dewatering activities. If any contaminated groundwater is collected from the dewatering operations, it should be treated to meet specified discharge criteria or disposed of at a facility licensed to handle such materials.

4.3 Future Hydrogeological Considerations

Once preliminary planning has been completed and potential locations for water supply or infrastructure have been determined, further investigation and analysis may be required. This work may consist of a series of investigations as options are investigated and detailed design is conducted. The following sub-sections discuss hydrogeological investigation and analysis that may need to be considered.

4.3.1 Water Supply

If greater water taking at the Millbrook Wellfield is being evaluated, a detailed review of existing pumping test and monitoring data to assess hydraulic performance at higher flow rates, to assess the potential implications of a higher sustained flow rate, and to identify data gaps and additional investigation if required should be considered. Considerations include the following:

- Aquifer hydraulics, including drawdown at the well, zone of influence in multiple directions and within multiple geologic units, drawdown at private wells in the area and potential hydraulic connections to surface water within the anticipated radius of influence.
- A private well survey may be conducted prior increasing the pumping rate to obtain background water level and water quality data of private water wells in proximity to the wellfield. If additional pumping tests are conducted, monitoring should be conducted frequently to observe any impacts related to quality or quantity of private well water.
- Surface water monitoring of nearby creeks should be conducted prior to increased pumping and frequently during any pumping test to observe any decrease in surface water flows due to the increased water taking. Should regular use pumping start at a new higher rate, regular surface water monitoring should be conducted (e.g., quarterly).
- Contaminant mobilization – An increased pumping rate may have the potential to mobilize VOC impact from Millbrook Correctional Centre located approximately 400-450 m to the northwest. Further investigation of potential mobilization of the VOC impact should be investigated, including sampling of private wells and the Millbrook Wellfield for PCE.

If other areas are being considered for new municipal wells, a detailed field investigation should be conducted at the location prior to construction and commissioning of the municipal well. Boreholes should be drilled and monitoring wells should be screened at the same target depth as the proposed municipal well. A review of the borehole stratigraphy should target the most permeable units for potential areas for the well to be screened in. Stabilized groundwater levels in the monitoring wells should be monitored and in-situ hydraulic conductivity testing should be completed to estimate the permeability of the screened soils. Groundwater quality samples should be conducted from the monitoring wells and compared to the ODWS to assess if the location is expected to have adequate water quality for municipal water supply purposes. Once the municipal well is installed, a pumping test should be conducted to determine the well yield and the appropriate pumping rate. Observation wells should be installed at various distances and depths to monitor the drawdown cone, which will assist in assessing aquifer properties. Additional groundwater samples should be collected from the pumping well and analyzed in comparison to the ODWS.

4.3.2 Construction Dewatering

Based on the Township of Cavan Monaghan Water and Wastewater Master Servicing Study Request for Proposal, construction of various infrastructure, including watermain, sewers, water towers, treatment plants, and new municipal wells, is being considered throughout the Study Area. As designs progress, field hydrogeological investigations should be conducted in the areas of potential construction in order to establish baseline hydrogeological conditions, assess groundwater conditions, evaluate construction dewatering requirements, assess the potential impacts that the proposed construction works may have on the local groundwater quality and quantity, determine water taking permit requirements, and develop a groundwater monitoring program.

Infrastructure requiring excavations below grade, such as watermains, sewers, treatment plants, and other structures may require construction dewatering. A representative number of boreholes should be drilled at the locations of proposed construction to characterize the subsurface geology. Monitoring wells should be installed in the boreholes and stabilized groundwater levels in the monitoring wells should be monitored. If groundwater conditions indicate the potential need for dewatering, additional stabilized water levels should be measured at the monitoring wells and in-situ hydraulic conductivity testing should be completed to estimate the permeability of the screened soils. Groundwater quality sampling from the monitoring wells should also be undertaken for preliminary assessment of groundwater disposal options and potential treatment, if required. Groundwater quality samples should be analyzed against the Provincial Water Quality Objectives (PWQOs) for select metals and inorganics criteria, Peterborough Sewer Use by-Law Limits, as well as for any anthropogenic contaminants if there are visual or olfactory signs of impact from the investigation.

Basal stability of excavations must be assessed due to potential basal heave or boiling where uplift from groundwater may exceed soil resistance, especially in areas of known artesian conditions. As noted previously, artesian groundwater has been observed within and near the Millbrook Wellfield and the Millbrook Wastewater Treatment Plant Focus Areas. In such cases, the potential for depressurization of underlying soils by dewatering may need to be considered. Depressurization may need to be considered in non-artesian conditions as well, depending on aquifer water levels and anticipated excavation depths.

Following completion of the field investigation, a report or several reports summarizing the findings of the hydrogeological investigation should be prepared. The reports would characterize the existing geological and hydrogeological setting and provide recommendations for the requirement of an EASR registration or Category 3 PTTW based on detailed design for areas requiring construction dewatering. Potential short-term and long-term impacts to the natural features and groundwater users as a result of construction related activities need to be investigated.

If it is determined that an EASR or PTTW is required, preparation of an application and supporting report should be undertaken. To support application for PTTW, a detailed hydrogeological assessment report must be completed outlining detailed monitoring and reporting requirements along with any required mitigation and management measures. Potential environmental impacts to streams from construction dewatering may require assessment by additional experts, including fluvial geomorphologists and aquatic biologists.

The details of the proposed hydrogeological field investigation should be developed by a professional hydrogeologist or hydrogeological engineer following review of any preliminary or detailed designs.

5. CLOSURE

We trust this memo meets your requirements. If you have any questions or require further information, please do not hesitate to contact us.

Yours truly,

Thurber Engineering Limited



Paul Coulson, P.Geo.
Hydrogeologist



David Hill, M.A.Sc., P.Eng., P.Geo.
Senior Hydrogeologist/Review Engineer

Attachments

Attachment A Figures

Site Location Plan
Physiographic Regions
Surficial Geology
Bedrock Geology
MECP Well Records
Natural Heritage Areas and Wellhead Protection Areas

Attachment B MECP Well Records

THURBER

6. REFERENCES

Betcher, R. Review and Comments on Existing Repots on the Millbrook Well Field Including Comments on the Need for Additional Studies. (2016).

Cambium Inc. Hydrogeological Monitoring Report (2019) – Town of Millbrook, Township of Cavan Monaghan. (2020).

Chapman, L.J. and Putnam, D.F. The Physiography of Southern Ontario, Third Edition. Ontario Geological Survey, Ontario Ministry of Natural Resources. (1984).

Cole Engineering Group Ltd. 2018 Groundwater Monitoring Report. Former Millbrook Correctional Centre. Millbrook, ON. (2019).

Geo-Logic Inc. Geotechnical Investigation Report. Millbrook Waste Water Treatment Plant Expansion. 25 Centennial Lane, Millbrook, Ontario. Project No. G024581A2. (2014).

Geo-Logic Inc. Geotechnical Investigation Report. Water Towner and Servicing. Millbrook, Ontario. Project No. G030141A1. (2014).

GHD Limited. Hydrogeologic Assessment Report. Proposal Residential Development. 825 Fallis Line. Millbrook, Ontario. (2017).

Ministry of Environment, Conservation and Parks. Millbrook Drinking Water System 2019-20 Compliance Inspection Report 1-L4FKG. (2019).

Ministry of the Environment, Conservation and Parks. 2020. Source Intake Protection Atlas.

Ministry of the Environment, Conservation and Parks. 2019. Permit to Take Water Database.

Ministry of the Environment, Conservation and Parks. 2019. Water Well Information System.

Ministry of Natural Resources and Forestry, Natural Heritage Information Centre database – Make a Heritage Map. Accessed November 2016, Queen's Printer for Ontario, 2015.

Ontario Geological Survey. Bedrock Geology of Ontario Seamless Coverage Data Set 6. (2005).

Ontario Geological Survey. Quaternary geology, seamless coverage of the province of Ontario: Ontario Geological Survey, Data Set 14. (1997).

THURBER

STATEMENT OF LIMITATIONS AND CONDITIONS

1. STANDARD OF CARE

This Report has been prepared in accordance with generally accepted engineering or environmental consulting practices in the applicable jurisdiction. No other warranty, expressed or implied, is intended or made.

2. COMPLETE REPORT

All documents, records, data and files, whether electronic or otherwise, generated as part of this assignment are a part of the Report, which is of a summary nature and is not intended to stand alone without reference to the instructions given to Thurber by the Client, communications between Thurber and the Client, and any other reports, proposals or documents prepared by Thurber for the Client relative to the specific site described herein, all of which together constitute the Report.

IN ORDER TO PROPERLY UNDERSTAND THE SUGGESTIONS, RECOMMENDATIONS AND OPINIONS EXPRESSED HEREIN, REFERENCE MUST BE MADE TO THE WHOLE OF THE REPORT. THURBER IS NOT RESPONSIBLE FOR USE BY ANY PARTY OF PORTIONS OF THE REPORT WITHOUT REFERENCE TO THE WHOLE REPORT.

3. BASIS OF REPORT

The Report has been prepared for the specific site, development, design objectives and purposes that were described to Thurber by the Client. The applicability and reliability of any of the findings, recommendations, suggestions, or opinions expressed in the Report, subject to the limitations provided herein, are only valid to the extent that the Report expressly addresses proposed development, design objectives and purposes, and then only to the extent that there has been no material alteration to or variation from any of the said descriptions provided to Thurber, unless Thurber is specifically requested by the Client to review and revise the Report in light of such alteration or variation.

4. USE OF THE REPORT

The information and opinions expressed in the Report, or any document forming part of the Report, are for the sole benefit of the Client. NO OTHER PARTY MAY USE OR RELY UPON THE REPORT OR ANY PORTION THEREOF WITHOUT THURBER'S WRITTEN CONSENT AND SUCH USE SHALL BE ON SUCH TERMS AND CONDITIONS AS THURBER MAY EXPRESSLY APPROVE. Ownership in and copyright for the contents of the Report belong to Thurber. Any use which a third party makes of the Report, is the sole responsibility of such third party. Thurber accepts no responsibility whatsoever for damages suffered by any third party resulting from use of the Report without Thurber's express written permission.

5. INTERPRETATION OF THE REPORT

a) Nature and Exactness of Soil and Contaminant Description: Classification and identification of soils, rocks, geological units, contaminant materials and quantities have been based on investigations performed in accordance with the standards set out in Paragraph 1. Classification and identification of these factors are judgmental in nature. Comprehensive sampling and testing programs implemented with the appropriate equipment by experienced personnel may fail to locate some conditions. All investigations utilizing the standards of Paragraph 1 will involve an inherent risk that some conditions will not be detected and all documents or records summarizing such investigations will be based on assumptions of what exists between the actual points sampled. Actual conditions may vary significantly between the points investigated and the Client and all other persons making use of such documents or records with our express written consent should be aware of this risk and the Report is delivered subject to the express condition that such risk is accepted by the Client and such other persons. Some conditions are subject to change over time and those making use of the Report should be aware of this possibility and understand that the Report only presents the conditions at the sampled points at the time of sampling. If special concerns exist, or the Client has special considerations or requirements, the Client should disclose them so that additional or special investigations may be undertaken which would not otherwise be within the scope of investigations made for the purposes of the Report.

b) Reliance on Provided Information: The evaluation and conclusions contained in the Report have been prepared on the basis of conditions in evidence at the time of site inspections and on the basis of information provided to Thurber. Thurber has relied in good faith upon representations, information and instructions provided by the Client and others concerning the site. Accordingly, Thurber does not accept responsibility for any deficiency, misstatement or inaccuracy contained in the Report as a result of misstatements, omissions, misrepresentations, or fraudulent acts of the Client or other persons providing information relied on by Thurber. Thurber is entitled to rely on such representations, information and instructions and is not required to carry out investigations to determine the truth or accuracy of such representations, information and instructions.

c) Design Services: The Report may form part of design and construction documents for information purposes even though it may have been issued prior to final design being completed. Thurber should be retained to review final design, project plans and related documents prior to construction to confirm that they are consistent with the intent of the Report. Any differences that may exist between the Report's recommendations and the final design detailed in the contract documents should be reported to Thurber immediately so that Thurber can address potential conflicts.

d) Construction Services: During construction Thurber should be retained to provide field reviews. Field reviews consist of performing sufficient and timely observations of encountered conditions in order to confirm and document that the site conditions do not materially differ from those interpreted conditions considered in the preparation of the report. Adequate field reviews are necessary for Thurber to provide letters of assurance, in accordance with the requirements of many regulatory authorities.

6. RELEASE OF POLLUTANTS OR HAZARDOUS SUBSTANCES

Geotechnical engineering and environmental consulting projects often have the potential to encounter pollutants or hazardous substances and the potential to cause the escape, release or dispersal of those substances. Thurber shall have no liability to the Client under any circumstances, for the escape, release or dispersal of pollutants or hazardous substances, unless such pollutants or hazardous substances have been specifically and accurately identified to Thurber by the Client prior to the commencement of Thurber's professional services.

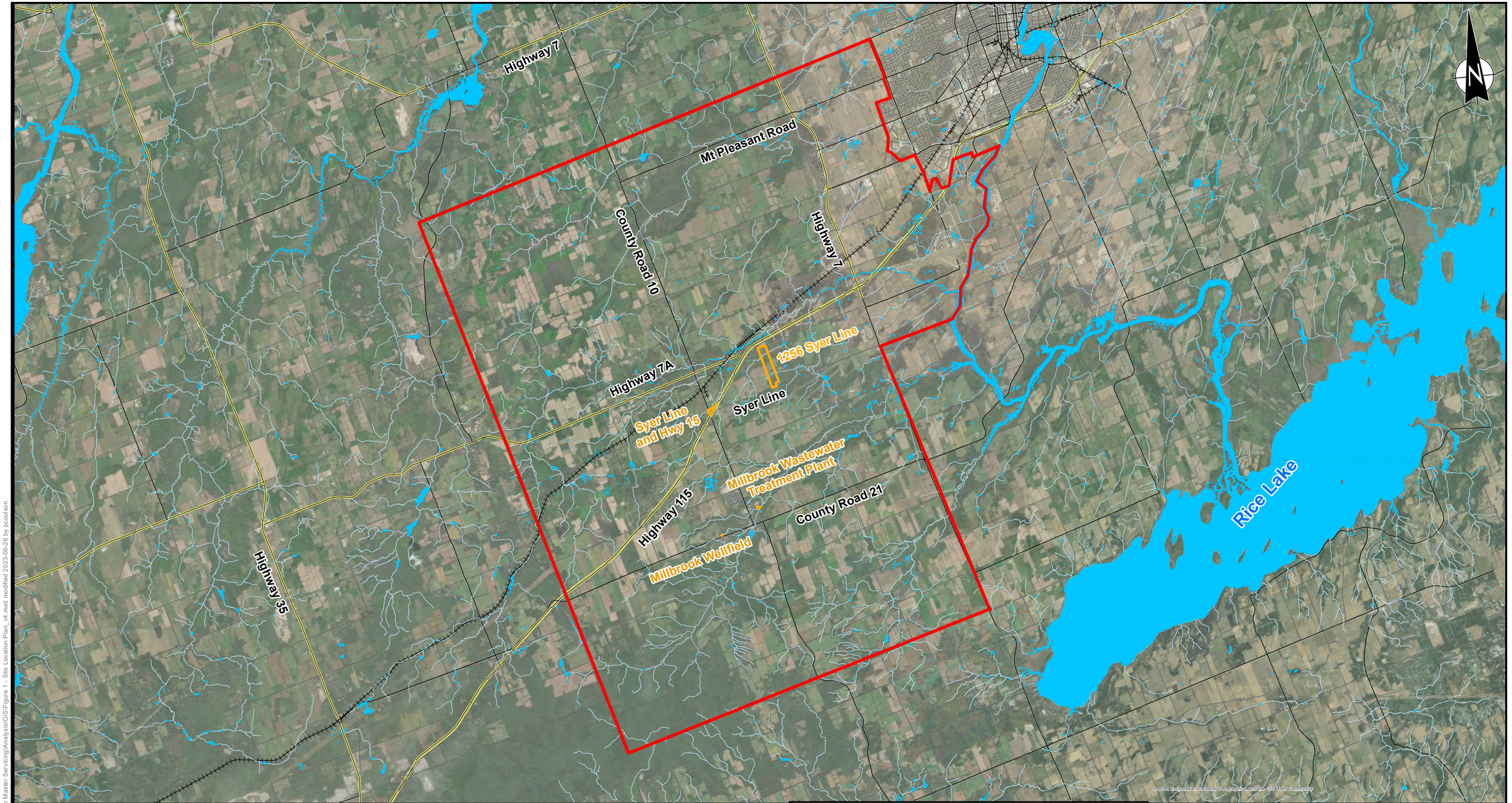
7. INDEPENDENT JUDGEMENTS OF CLIENT

The information, interpretations and conclusions in the Report are based on Thurber's interpretation of conditions revealed through limited investigation conducted within a defined scope of services. Thurber does not accept responsibility for independent conclusions, interpretations, interpolations and/or decisions of the Client, or others who may come into possession of the Report, or any part thereof, which may be based on information contained in the Report. This restriction of liability includes but is not limited to decisions made to develop, purchase or sell land.

THURBER

Attachment A

Figures



LEGEND:

- Study Area
- Focus Areas
- Waterbody
- Watercourse
- Railway

Road Class

- Arterial
- Expressway / Highway
- Street

1,000 500 0 1,000 2,000 m

UTM 17 NAD 83

R.V. ANDERSON ASSOCIATES LIMITED

DESKTOP HYDROGEOLOGICAL STUDY
WATER AND WASTEWATER MASTER SERVICING STUDY
TOWNSHIP OF CAVAN MONAGHAN, ONTARIO

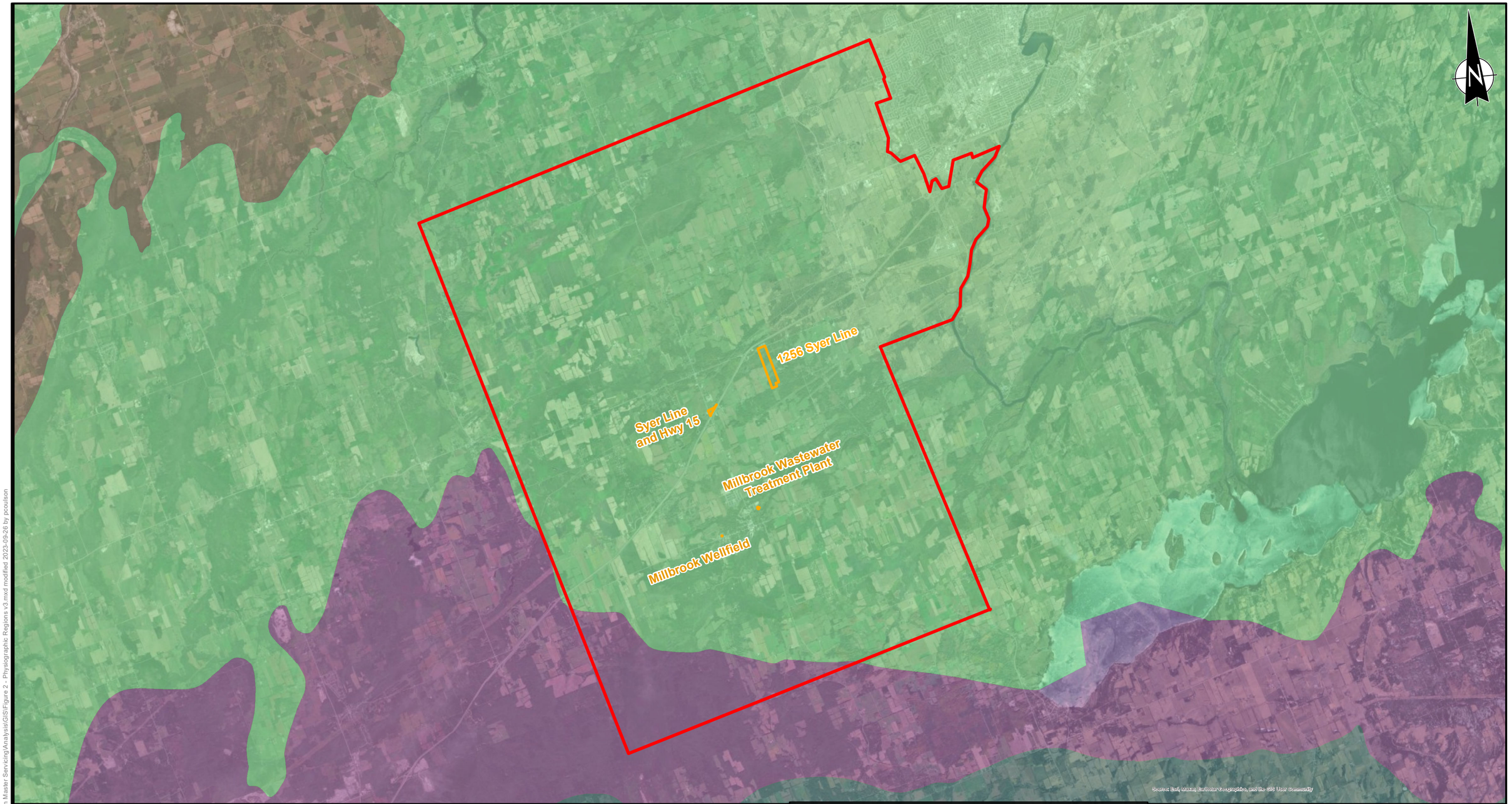
SITE LOCATION PLAN

PROJECT No. 29561

THURBER ENGINEERING LTD.

DESIGNED:	DRAWN:	APPROVED:
AH	AH	DH
DATE: SEPTEMBER 26, 2023	SCALE: 1:130,000	FIGURE NO. 1

H:\29000-29999\29000-29999\29561 Cavan Monaghan Master Servicing\Analysis\GIS\Figure 1 - Site Location Plan_v4.mxd modified 2023-09-26 by pcoulson



H:\20000-29999\29000-29999\29561 Cavan Monaghan Master Servicing\Analysis\GIS\Figure 2 - Physiographic Regions v3.mxd modified 2023-09-26 by pculson

LEGEND:

- Study Area
- Focus Areas

REGION

- Oak Ridges Moraine
- Peterborough Drumlin Field
- Schomberg Clay Plains
- South Slope

1,000 500 0 1,000 2,000 m

UTM 17 NAD 83

Data Source: Ontario Geological Survey (OGS)

R.V. ANDERSON ASSOCIATES LIMITED

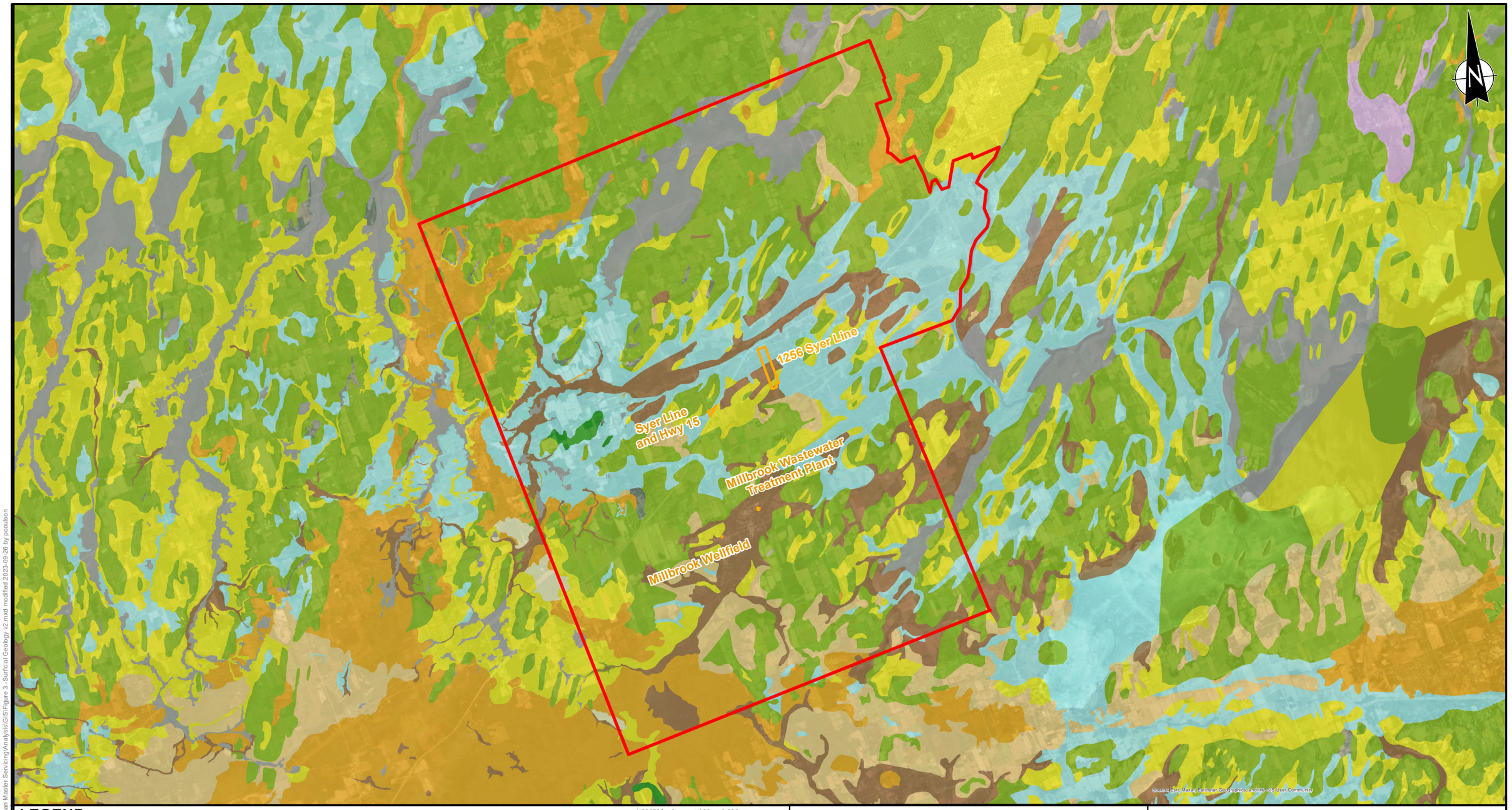
DESKTOP HYDROGEOLOGICAL STUDY
WATER AND WASTEWATER MASTER SERVICING STUDY
TOWNSHIP OF CAVAN MONAGHAN, ONTARIO

PHYSIOGRAPHIC REGIONS

PROJECT No. **29561**

THURBER ENGINEERING LTD.

DESIGNED:	DRAWN:	APPROVED:
AH	AH	DH
DATE: SEPTEMBER 26, 2023	SCALE: 1:130,000	FIGURE NO. 2



LEGEND:

Study Area

Focus Areas

4: Paleozoic bedrock-drift complex

5b: Stone-poor, carbonate-derived silty to sandy till

5d: Glaciolacustrine-derived silty to clayey till

6: Ice-contact stratified deposits

7: Glaciofluvial deposits

8a: Massive-well laminated

9c: Foreshore-basinal deposits

17: Eolian deposits

12: Older alluvial deposits

19: Modern alluvial deposits

20: Organic deposits

Data Source: Ontario Geological Survey (OGS)

1,000 500 0 1,000 2,000 m

UTM 17 NAD 83

R.V. ANDERSON ASSOCIATES LIMITED

DESKTOP HYDROGEOLOGICAL STUDY
WATER AND WASTEWATER MASTER SERVICING STUDY
TOWNSHIP OF CAVAN MONAGHAN, ONTARIO

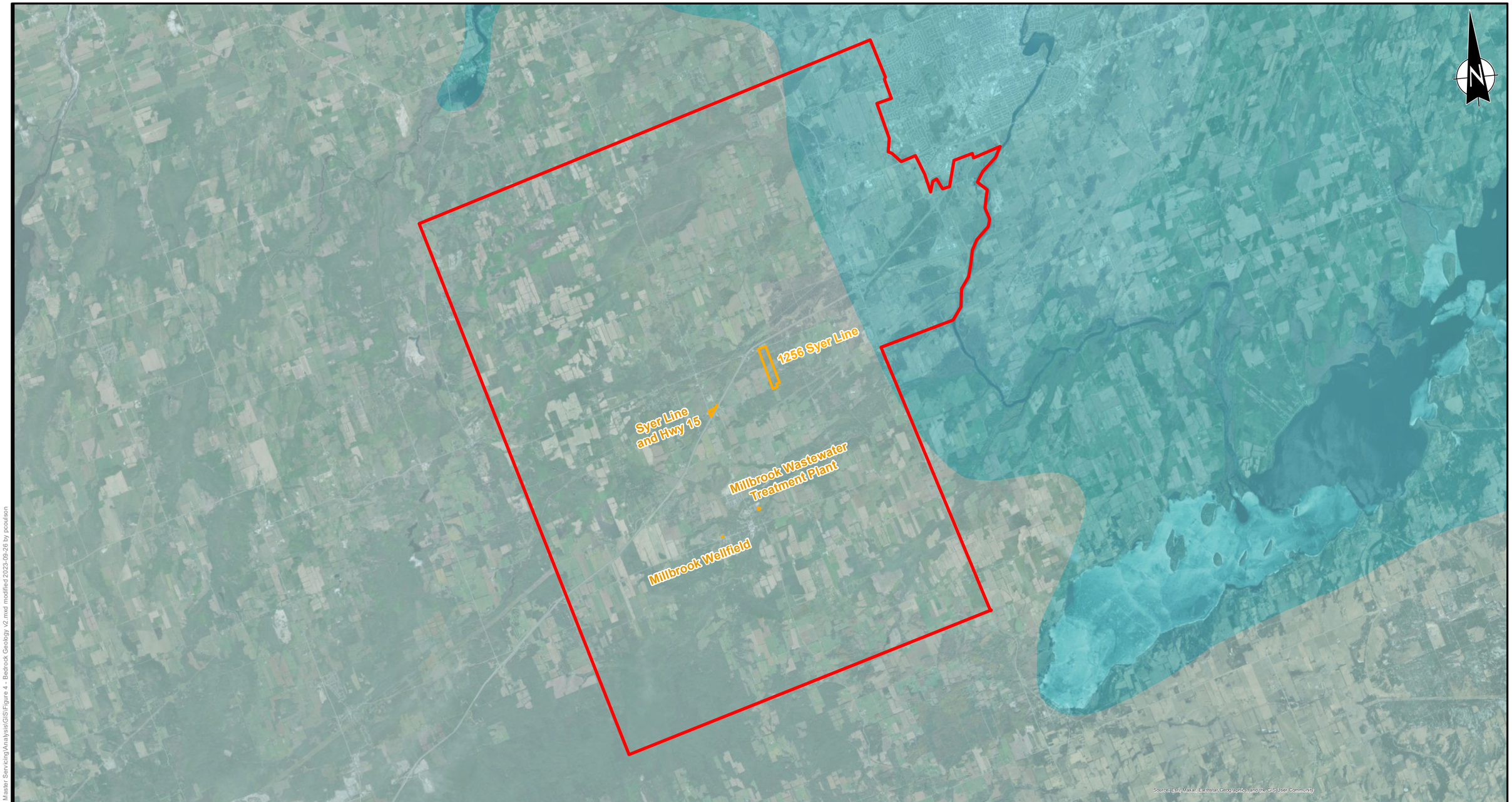
SURFICIAL GEOLOGY

PROJECT No. **29561**

THURBER ENGINEERING LTD.

DESIGNED:	DRAWN:	APPROVED:
AH	AH	DH
DATE: SEPTEMBER 26, 2023	SCALE: 1:130,000	FIGURE NO. 3

H:\20000-29999\29000-29999\29561 Cavan Monaghan Master Servicing\Analysis\GIS\Figure 3 - Surficial Geology v2.mxd modified 2023-09-26 by pcoulson



LEGEND:

- Study Area
- Focus Areas

FORMATION

- Lindsay
- Verulam

1,000 500 0 1,000 2,000 m

UTM 17 NAD 83

Data Source: Ontario Geological Survey (OGS)

R.V. ANDERSON ASSOCIATES LIMITED

DESKTOP HYDROGEOLOGICAL STUDY
WATER AND WASTEWATER MASTER SERVICING STUDY
TOWNSHIP OF CAVAN MONAGHAN, ONTARIO

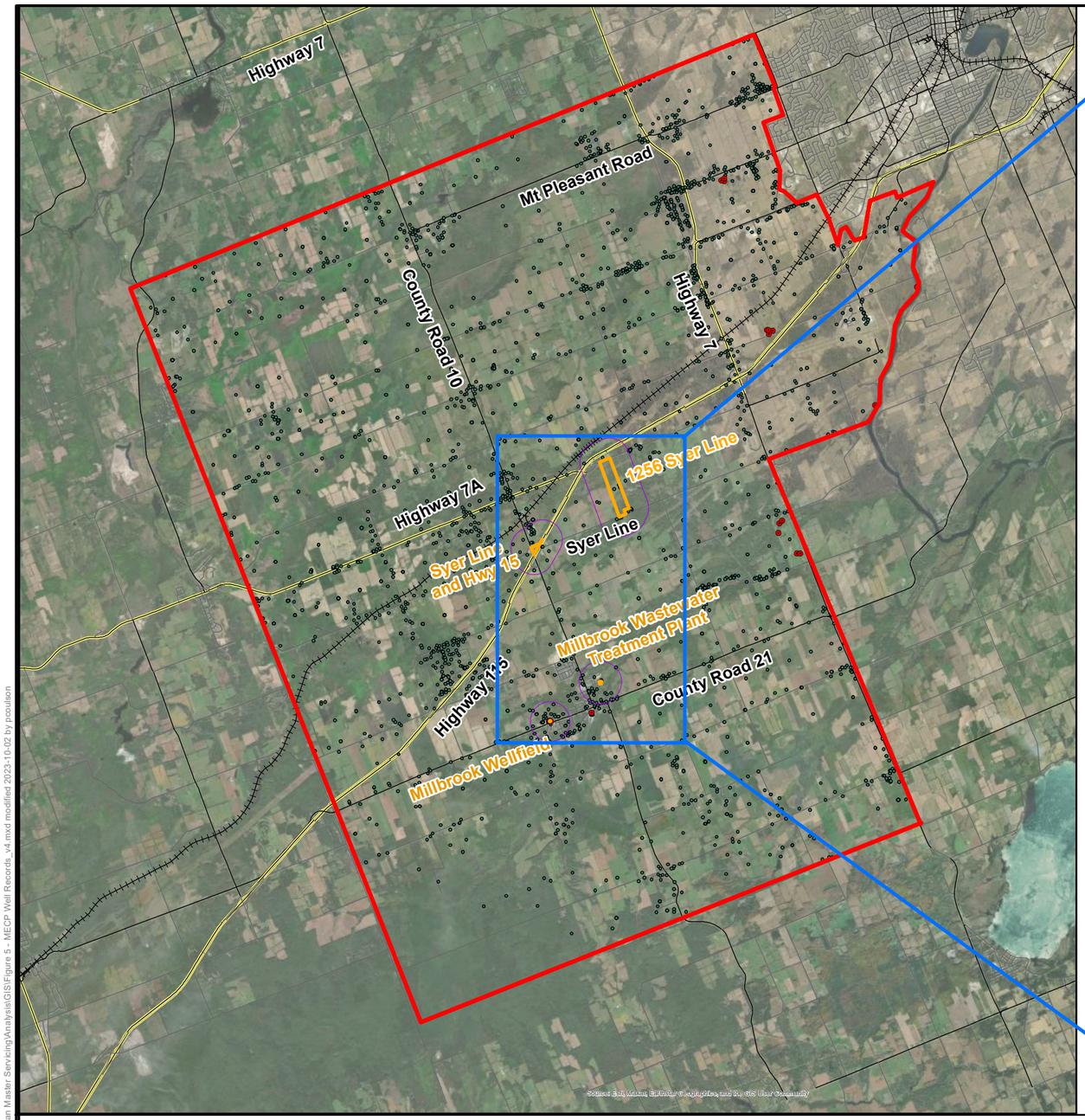
BEDROCK GEOLOGY

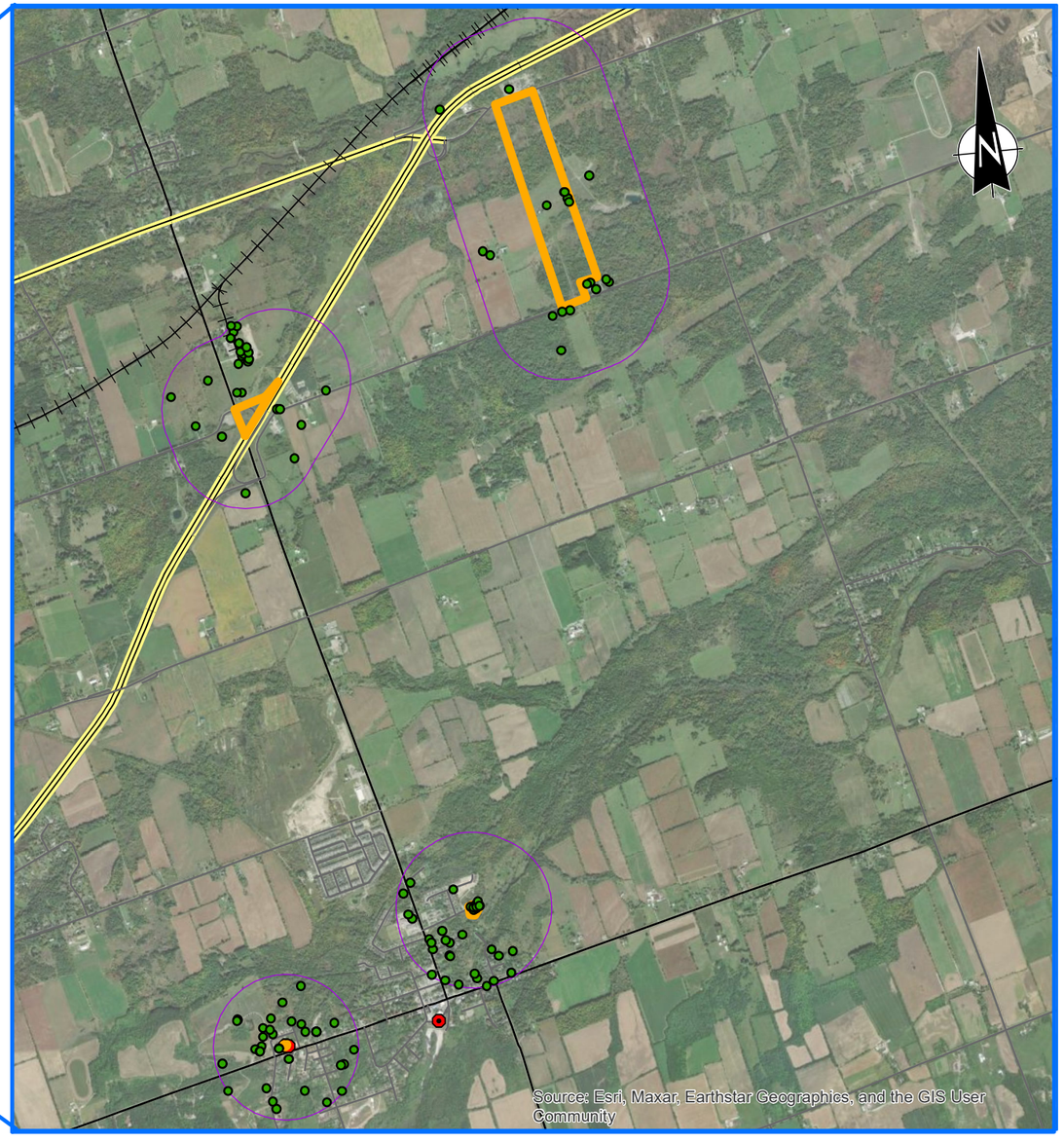
PROJECT No. **29561**

THURBER ENGINEERING LTD.

DESIGNED:	DRAWN:	APPROVED:
AH	AH	DH
DATE: SEPTEMBER 26, 2023	SCALE: 1:130,000	FIGURE NO. 4

H:\20000-29999\29000-29999\29561 Cavan Monaghan Master Servicing\Analysis\GIS\Figure 4 - Bedrock Geology v2.mxd modified 2023-09-26 by pcoulson





LEGEND:

- Study Area
- Focus Areas
- Focus Areas (500 m Buffer)
- PTTW
- MECP Well Records
- Railway

Road Class

- Arterial
- Street
- Expressway / Highway

1,000 500 0 1,000 2,000 m

UTM 17 NAD 83

Data Source: Ministry of the Environment, Conservation and Parks Well Records

R.V. ANDERSON ASSOCIATES LIMITED

DESKTOP HYDROGEOLOGICAL STUDY
WATER AND WASTEWATER MASTER SERVICING STUDY
TOWNSHIP OF CAVAN MONAGHAN, ONTARIO

MECP WELL RECORDS

PROJECT No. 29561

THURBER ENGINEERING LTD.

DESIGNED:	DRAWN:	APPROVED:
AH	AH	DH
DATE:	SCALE:	FIGURE NO.
OCTOBER 2, 2023	1:130,000	5

H:\20000-29999\29000-29999\29561 Cavan Monaghan Master Servicing\Analysis\GIS\Figure 5 - MECP Well Records_v4.mxd modified 2023-10-02 by psoulsen

Highway 7
Best's Pond
Mt Pleasant Road
Jackson Creek
County Road 10
Highway 7
Cavan Creek
1256 Syer Line
Highway 7A
Syer Line
Syer Line and Hwy 15
Millbrook Wastewater Treatment Plant
Highway 115
County Road 21
Millbrook Well Field
Baxter Creek
Squirrel Creek
Rice Lake
Highway 35

LEGEND:

- Study Area
- Focus Areas
- Watercourse
- Waterbody
- Wetland
- ANSI
- Railway
- NHS
- Wooded Area

Road Class

- Arterial
- Street
- Expressway / Highway

- WHPA-A
- WHPA-B
- WHPA-C
- WHPA-D

2,500 0 2,500 5,000m

SCALE 1:125,000

Data Source: Ontario Minstry of Natural Resources and Forestry (ws.lioservices.lrc.gov.on.ca)

R.V. ANDERSON ASSOCIATES LIMITED

DESKTOP HYDROGEOLOGICAL STUDY
WATER AND WASTEWATER
MASTER SERVICING STUDY
TOWNSHIP OF CAVAN MONAGHAN, ONTARIO
NATURAL HERITAGE & WELLHEAD PROTECTION AREAS
JOB# 29561

THURBER ENGINEERING LTD.

ENGINEER :	DRAWN :	APPROVED :
AH	MFA	DH
DATE :	SCALE :	DRAWING No.
SEPTEMBER 2023	1:125,000	FIGURE 6

FILENAME: H:\Drafting\29000\29561\TES-29561-HGPL.dwg
PLOTDATE: Sep 29, 2023 - 2:08 PM

THURBER

Attachment B

MECP Well Records

Well ID	UTM Zone	Easting	Northing	Well Depth (m)	Depth to Bedrock (m)	Static Water Level (m)	Purpose
7256988	17	704350	4892429	-	-	-	Abandoned-Other
7256986	17	704350	4892429	-	-	-	Unknown
5113303	17	704212.2	4892553	30.8	29.9	1.8	Water Supply
7231144	17	704350	4892429	-	-	-	Abandoned-Other
7158468	17	704184	4892097	4	-	-	Unknown
7236982	17	704331	4892434	-	-	-	Unknown
1902417	17	704061.2	4891965	9.1	-	-	Water Supply
7256991	17	704350	4892414	-	-	-	Unknown
1902419	17	704045.2	4892210	27.4	-	3.7	Water Supply
1902400	17	703925.2	4892351	30.8	30.5	2.7	Water Supply
1902427	17	704621.2	4892128	32.3	-	10.4	Water Supply
7256987	17	704350	4892429	-	-	-	Abandoned-Other
1902431	17	704440.2	4891887	26.5	-	-	Water Supply
7236981	17	704393	4892442	21.3	-	-0.2	Dewatering
1902433	17	704187.2	4892186	37.5	-	6.1	Water Supply
7256989	17	704371	4892435	-	-	-	Abandoned-Other
7256985	17	704365	4892423	-	-	-	Abandoned-Other
1902403	17	704373.2	4891940	41.5	-	-0.3	Water Supply
1903557	17	704155.2	4892203	36.9	-	4.9	Water Supply
1902411	17	704133.2	4892267	14	-	-	Water Supply
1902426	17	704488.2	4891921	26.5	-	-	Water Supply
1902405	17	704249.2	4891898	40.5	36.6	0	Water Supply
7256984	17	704349	4892429	-	-	-	Abandoned-Supply
1902424	17	704153.2	4891925	20.1	-	-0.6	Water Supply
1902438	17	704070.2	4892140	29.3	-	2.7	Water Supply
1902434	17	704270.2	4892240	37.8	-	6.1	Water Supply
7159632	17	704191	4892091	7	-	4	Test Hole
7256983	17	704366	4892451	-	-	-	Unknown
7256990	17	704371	4892435	-	-	-	Abandoned-Other
1902407	17	703913.2	4892601	36.9	33.5	-	Water Supply
1902422	17	703898.2	4892380	39.3	-	3	Water Supply
1903385	17	704355.2	4891973	42.4	39.3	9.1	Water Supply
1902404	17	704474.2	4892138	27.4	-	12.2	Water Supply
1902415	17	704521.2	4892096	17.7	-	-	Water Supply
1902410	17	703865.2	4892527	32.3	-	-	Water Supply
7236980	17	704381	4892470	-	-	-0.1	Dewatering
1902420	17	704058.2	4892188	30.5	-	2.4	Water Supply
1902437	17	704611.2	4891979	32.3	-	3	Water Supply
7256982	17	704392	4892439	-	-	-	Unknown

Well ID	UTM Zone	Easting	Northing	Well Depth (m)	Depth to Bedrock (m)	Static Water Level (m)	Purpose
1903184	17	704465.2	4896923	8.2	-	7.3	Water Supply
5120003	17	705144	4897470	21	-	4.5	Test Hole
7167834	17	705153	4896731	48.8	17.1	-	Abandoned-Supply
5109762	17	705015.2	4896543	36	32	15.2	Water Supply
1903268	17	704415.2	4896948	28.4	26.5	7	Water Supply
5120099	17	704998	4897315	23.5	-	4.2	Observation Wells
7209860	17	705283	4896735	8.3	-	1.6	Water Supply
5120100	17	704998	4897315	23.5	-	4	Observation Wells
5119922	17	705006	4897288	23.2	-	2.7	Test Hole
1902723	17	704115.1	4897923	25.9	25.6	-	Water Supply
1900452	17	704951.2	4896263	55.8	48.8	33.5	Water Supply
7209876	17	705265	4896757	25.6	10.4	-	Abandoned-Supply
1903805	17	704855.2	4897263	21.3	-	5.5	Water Supply
5118505	17	704972.6	4897355	12.2	-	1.5	Water Supply
7170162	17	705192	4896687	39	14.6	3.7	Water Supply
7167848	17	704959	4896532	-	-	20.7	Abandoned-Supply
5108938	17	704595.1	4898063	23.5	21.6	3	Water Supply
5108635	17	704895.2	4896503	40.8	31.1	12.2	Water Supply
7160636	17	705131	4896722	45.7	20.7	9.8	Water Supply
5116141	17	704975.2	4897355	27.4	24.4	7.6	Water Supply

Well ID	UTM Zone	Easting	Northing	Well Depth (m)	Depth to Bedrock (m)	Static Water Level (m)	Purpose
1900449	17	703164.2	4895753	12.8	-	6.7	Water Supply
5108968	17	703115.2	4895523	40.8	-	14.6	Water Supply
5120331	17	702756	4896228	-	-	-	Observation Wells
7156713	17	702737	4896316	15.2	-	-	Observation Wells
1900460	17	702522.1	4896057	24.4	-	12.2	Water Supply
7216956	17	703333	4895990	23.8	22.6	4.4	Water Supply
7102051	17	702765	4896240	5.1	-	-	Observation Wells
1902623	17	702755.1	4895973	21	-	2.1	Water Supply
1902714	17	702265.1	4895943	7	-	3	Water Supply
5110926	17	702995.1	4895863	24.7	21.3	4.6	Water Supply
5109276	17	702615.1	4895673	12.2	-	0	Water Supply
1902716	17	702435.1	4895743	6.7	-	-	Water Supply
5120734	17	702794	4896188	-	-	-	Abandoned-Other
1904092	17	703015.1	4895863	18.9	-	6.7	Water Supply
1902531	17	702720.1	4895973	21	-	2.1	Water Supply
7138896	17	702733	4896316	9.1	-	6.1	Test Hole
7138896	17	702730	4896173	-	-	2.4	Test Hole
7138896	17	702743	4896253	-	-	6.1	Test Hole
7138896	17	702800	4896251	-	-	4.6	Test Hole
7138896	17	702786	4896289	-	-	3.7	Test Hole
5120675	17	702779	4895284	9	-	-	Observation Wells
7116458	17	702680	4896349	-	-	-	Test Hole
7116458	17	702697	4896395	-	-	-	Test Hole
7116458	17	702720	4896432	-	-	-	Test Hole
7116458	17	702678	4896350	9.1	-	4.2	Test Hole
7116458	17	702680	4896435	-	-	-	Test Hole

Well ID	UTM Zone	Easting	Northing	Well Depth (m)	Depth to Bedrock	Static Water Level (M)	Purpose
1902408	17	702889.2	4891471	29.9	-	1.8	Water Supply
1902398	17	703390.2	4891634	23.8	-	1.8	Water Supply
5108216	17	703265.2	4891573	33.5	-	-	Water Supply
5108280	17	703265.2	4891573	31.1	-	-6.1	Test Hole
1902439	17	702966.2	4891091	23.2	-	1.5	Water Supply
7262813	17	702725	4891659	-	-	-	Observation Wells
7233409	17	702899	4891537	17.9	-	-	Observation Wells
1902393	17	702846.2	4891450	30.5	-	1.2	Test Hole
5108215	17	703265.2	4891573	32	-	-4.9	Water Supply
1903739	17	703075.2	4891383	24.4	-	0	Water Supply
5108279	17	703265.2	4891573	33.8	-	-4.9	Test Hole
5119300	17	703008	4891459	8.8	-	-	Abandoned-Quality
7233407	17	702901	4891596	26.8	-	-	Observation Wells
5119299	17	703009	4891456	32.3	-	-5.2	Water Supply
1902527	17	703165.2	4891623	50	48.8	-7	Water Supply
1902436	17	702924.2	4891185	48.8	-	3	Water Supply
7182017	17	703044	4890960	32	-	-	Water Supply
1900356	17	703189.2	4891166	31.1	-	12.2	Water Supply
7251394	17	702949	4891587	-	-	-	Observation Wells
1902529	17	703190.2	4891573	36	-	-7	Test Hole
7233408	17	702722	4891649	30.5	-	-	Observation Wells
7254536	17	702877	4891437	-	-	-	Abandoned-Other
7254535	17	702881	4891439	-	-	1.8	Abandoned-Other
7251393	17	702955	4891666	-	-	-	Observation Wells

Permit Number	Permit Holder Name	Water Taking Category	Purpose	Permit Expiry Date	Permit Issue Date	UTM Zone	Easting	Northing	Max LPD	Days/year of Water Taking	Max Hours/Day of Water Taking	Max LPM
0130-A2VQVQ	233859 Ontario Limited	Water Supply	Other - Water Supply	2025-09-30	2015-10-05	17	707860	4904930	8000	365	24	30
0331-A4MM2Q	1078815 Ontario Inc.	Commercial	Other - Commercial	2025-10-31	2015-12-15	17	704110	4891649	227300	50	2	909
3167-ANDFEV	1131551 Ontario Limited o/a Keystone Links Golf and Country Club	Commercial	Golf Course Irrigation	2027-06-30	2017-08-01	17	708822	4901151	650000	150	24	452
4474-BMZK9A	Baxter Creek Country Club Ltd.	Water Supply	Communal	2030-04-02	2020-04-17	17	709401	4895507	48960	365	24	34
7704-AW7HJF	The Corporation of the Township of Cavan-Monaghan	Water Supply	Municipal	2024-03-31	2018-02-23	17	703051	4891483	3000000	365	24	1500
0130-A2VQVQ	233859 Ontario Limited	Commercial	Golf Course Irrigation	2025-09-30	2015-10-05	17	707787	4904956	216000	153	9	400
3167-ANDFEV	1131551 Ontario Limited o/a Keystone Links Golf and Country Club	Miscellaneous	Other - Miscellaneous	2027-06-30	2017-08-01	17	708971	4901121	16560	275	12	23
4474-BMZK9A	Baxter Creek Country Club Ltd.	Water Supply	Communal	2030-04-02	2020-04-17	17	709486	4895500	33120	365	24	23
7704-AW7HJF	The Corporation of the Township of Cavan-Monaghan	Water Supply	Municipal	2024-03-31	2018-02-23	17	703057	4891480	3000000	365	24	1500
0130-A2VQVQ	233859 Ontario Limited	Commercial	Golf Course Irrigation	2025-09-30	2015-10-05	17	707861	4904994	432000	153	9	800
3167-ANDFEV	1131551 Ontario Limited o/a Keystone Links Golf and Country Club	Water Supply	Other - Water Supply	2027-06-30	2017-08-01	17	708869	4901043	66250	365	12	46
4474-BMZK9A	Baxter Creek Country Club Ltd.	Commercial	Golf Course Irrigation	2030-04-02	2020-04-17	17	708988	4896273	665280	213	24	462
7704-AW7HJF	The Corporation of the Township of Cavan-Monaghan	Water Supply	Municipal	2024-03-31	2018-02-23	17	703073	4891472	3000000	365	24	1500
3167-ANDFEV	1131551 Ontario Limited o/a Keystone Links Golf and Country Club	Commercial	Golf Course Irrigation	2027-06-30	2017-08-01	17	708861	4901147	1000000	150	8	2200
4474-BMZK9A	Baxter Creek Country Club Ltd.	Commercial	Golf Course Irrigation	2030-04-02	2020-04-17	17	709050	4896344	4367520	213	24	3033
6887-AAXQKU	1078815 Ontario Inc.	Commercial	Other - Commercial	2025-11-30	2016-06-24	17	712629	4902114	454600	200	4	1818
4474-BMZK9A	Baxter Creek Country Club Ltd.	Commercial	Golf Course Irrigation	2030-04-02	2020-04-17	17	708953	4896042	363960	213	24	3033
6887-AAXQKU	1078815 Ontario Inc.	Commercial	Other - Commercial	2025-11-30	2016-06-24	17	711484	4899175	454600	200	4	1818

Ontario Ministry of the Environment

The Ontario Water Resources Act
WATER WELL RECORD

Print only in spaces provided.
Mark correct box with a checkmark, where applicable.

11 (1 2) **5119299**

Municipality 51024 (10 14) Con. CON 05 (15 22 23 24)

County or District	Township/Borough/City/Town/Village	Con block tract survey, etc.	Lot (25-27)
Peterborough	Cavan Twp., Town of Millbrook	Con.5	Pt.10

[redacted]

Address: 1 King St.E., Millbrook,Ont.L0A 1G0

Date completed (48-53): 21 day 11 month 02 year

21 (1 2) UTM (10) Northing (12 17 18 24) RC (25) Elevation (26) RC (30) Basin Code (31 47) i ii iii iv

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)

General colour	Most common material	Other materials	General description	Depth - feet From	Depth - feet To
Black	Topsoil			0	1½
Gray	Clay & stones		hard	1½	5
Gray	Sandy clay & gravel		soft	5	28
Brown	Sand	some gravel	water bearing	28	33
Brown	Coarse sand & gravel		water bearing	33	74
Brown	Gravel	some sand	water bearing	74	105
Gray	Clay & gravel			105	106
		* Finished depth 102 ft.			

31 (10 14 15 21)

32 (32 43 54 65 75 80)

41 WATER RECORD

Water found at - feet (10-13)	Kind of water	
86-101	1 ☒ Fresh 2 ☐ Salty (UNTESTED) 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas	14
15-18	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas	19
20-23	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas	24
25-28	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas	29
30-33	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas	34 60

51 CASING & OPEN HOLE RECORD

Inside diam inches	Material	Wall thickness inches	Depth - feet From	Depth - feet To
10-11	1 ☒ Steel 12 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic			13-16
10		.380	+3	85
17-18	1 ☒ Steel 19 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic			20-23
14		.380	+1	20
24-25	1 ☐ Steel 26 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic			27-30

SCREEN

Sizes of opening (Slot No.) (31-33)	Diameter (34-38)	Length (39-40)
80	10 inches	15 feet

Material and type	Depth at top of screen (41-44)	
S.S. Telescoping	86 feet	30

61 PLUGGING & SEALING RECORD

☒ Annular space ☐ Abandonment

Depth set at - feet From (10-13)	To (14-17)	Material and type (Cement grout, bentonite, etc.)
0	20	Cement (outside 14")
0 (18-21)	20 (22-25)	Bentonite grout
26-29	30-33	80 (inside 14")

71 PUMPING TEST

Pumping test method (10): 1 ☒ Pump 2 ☐ Bailer

Pumping rate (11-14): 350 GPM

Duration of pumping (15-16 Hours, 17-18 Mins): 24 Hours

Static level (19-21): +16.50 feet

Water level end of pumping (22-24): +2.82 feet

25 Water levels during: 1 ☒ Pumping 2 ☐ Recovery

15 minutes (26-28)	30 minutes (29-31)	45 minutes (32-34)	60 minutes (35-37)
+11.94 feet	+10.84 feet	+10.47 feet	+10.60 feet

If flowing give rate (38-41): +350 GPM

Pump intake set at: 40 feet

Water at end of test (42): ☒ Clear ☐ Cloudy

Recommended pump type: ☐ Shallow ☒ Deep

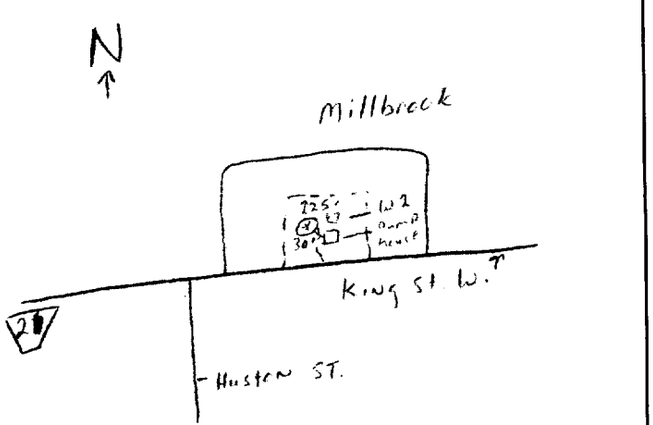
Recommended pump setting (43-45): 40 feet

Recommended pump rate (46-49): 350 GPM

50-53

LOCATION OF WELL

In diagram below show distances of well from road and lot line.
Indicate north by arrow.



252383

FINAL STATUS OF WELL (54)

1 ☒ Water supply
2 ☐ Observation well
3 ☐ Test hole
4 ☐ Recharge well
5 ☐ Abandoned, insufficient supply
6 ☐ Abandoned, poor quality
7 ☐ Abandoned (Other)
8 ☐ Dewatering
9 ☐ Unfinished
10 ☐ Replacement well

WATER USE (55-56)

1 ☐ Domestic
2 ☐ Stock
3 ☐ Irrigation
4 ☐ Industrial
5 ☒ Commercial
6 ☒ Municipal
7 ☐ Public supply
8 ☐ Cooling & air conditioning
9 ☐ Not use
10 ☐ Other

METHOD OF CONSTRUCTION (57)

1 ☐ Cable tool
2 ☒ Rotary (conventional)
3 ☐ Rotary (reverse)
4 ☒ Rotary (air)
5 ☐ Air percussion
6 ☐ Boring
7 ☐ Diamond
8 ☐ Jetting
9 ☐ Driving
10 ☐ Digging
11 ☐ Other

Name of Well Contractor	Well Contractor's Licence No.
G.Hart & Sons Well Drilling Ltd.	2662

Address: Box 850, Fenelon Falls, ON

Name of Well Technician	Well Technician's Licence No.
Bryan Watson	T-2441

Signature of Technician/Contractor: Bryan Watson

Submission date: day mo yr

MINISTRY USE ONLY

Data source (58) | Contractor (59-62): 2662 | Date received (63-68): FEB 19 2003 (80)

Date of inspection | Inspector

Remarks: CSS.ES3

0506 (07/00) Front Form 9

2 - MINISTRY OF THE ENVIRONMENT COPY

APPENDIX 3

NATURAL HERITAGE MAPS



APPENDIX 3-1

Natural Heritage Map – Millbrook Area, MNRF

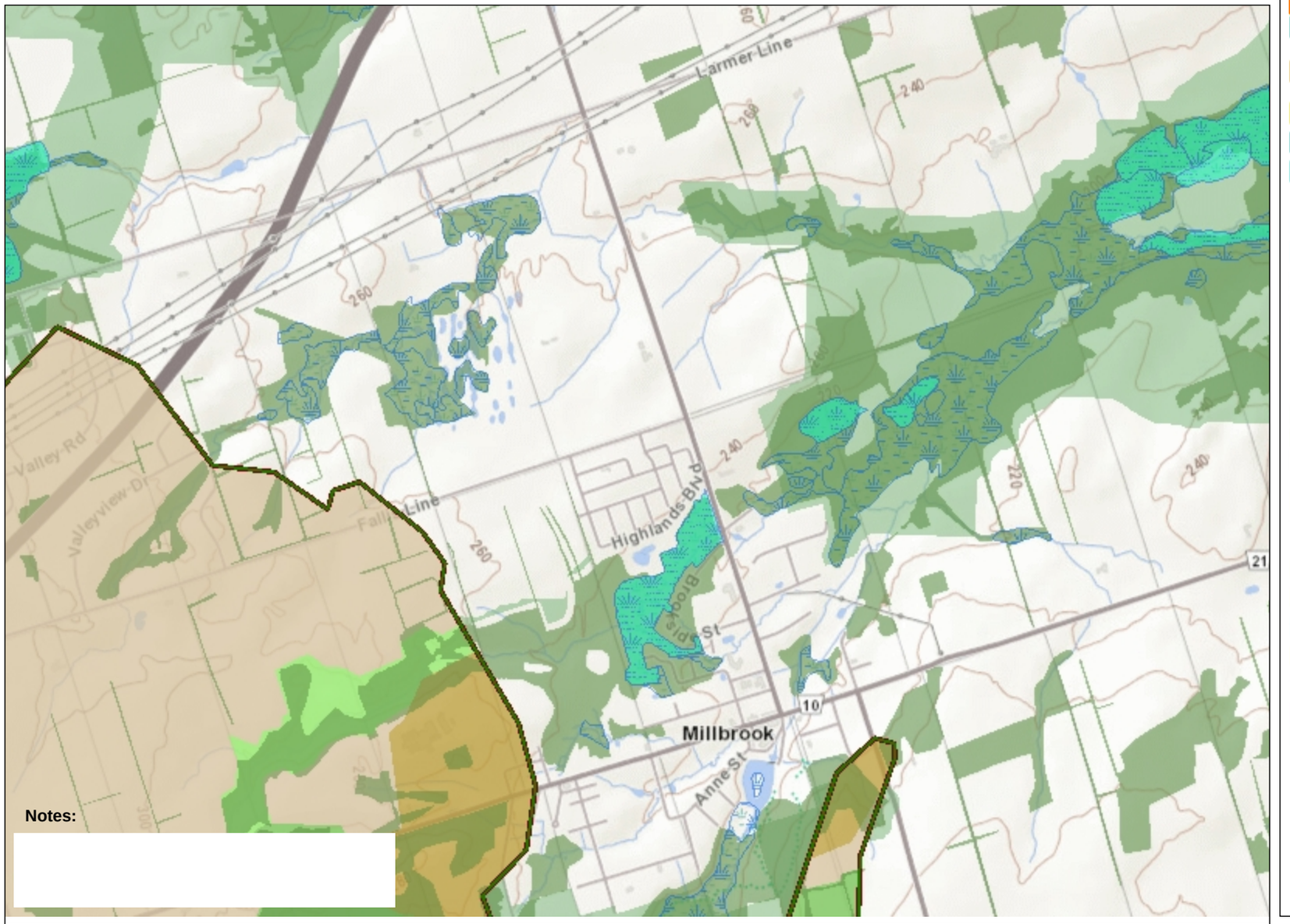
Ontario

Ministry of Natural Resources and Forestry

Make-a-Map: Natural Heritage Areas

Natural Heritage Map - Millbrook Area

Map created:10/7/2023



Notes:

Legend

- Greenbelt Area Boundary
- ORM Boundary
- NEP Boundary
- NEP Parks and Open Space System
- ANSI
- Earth Science Provincially Significant/sciences de la terre d'importance provinciale
- Earth Science Regionally Significant/sciences de la terre d'importance régionale
- Life Science Provincially Significant/sciences de la vie d'importance provinciale
- Life Science Regionally Significant/sciences de la vie d'importance régionale
- Evaluated Wetland
- Provincially Significant/considérée d'importance provinciale
- Non-Provincially Significant/non considérée d'importance provinciale
- Unevaluated Wetland
- Woodland
- Conservation Reserve
- Provincial Park
- ORM Land Use Designation
- Countryside Area/zone de campagne
- Natural Core Area/zone centrale naturelle
- Natural Linkage Area/lien naturel
- Palgrave Estates Residential Community/communauté résidentielle de Palgrave Estates
- Rural Settlement/zone de peuplement rurale
- Settlement Area/zone de peuplement
- NEP Land Use Designation
- Escarpment Natural Area/zone naturelle de l'escarpement
- Escarpment Protection Area/zone protégée l'escarpement
- Escarpment Recreation Area/zone récréative de l'escarpement
- Escarpment Rural Area/zone rurale de l'escarpement
- Mineral Resource Extraction Area/zone d'extraction de resources minérales
- Urban Area/zone urbaine
- Natural Heritage System

1.3 0 0.66 1.3 Kilometres

Absence of a feature in the map does not mean they do not exist in this area.



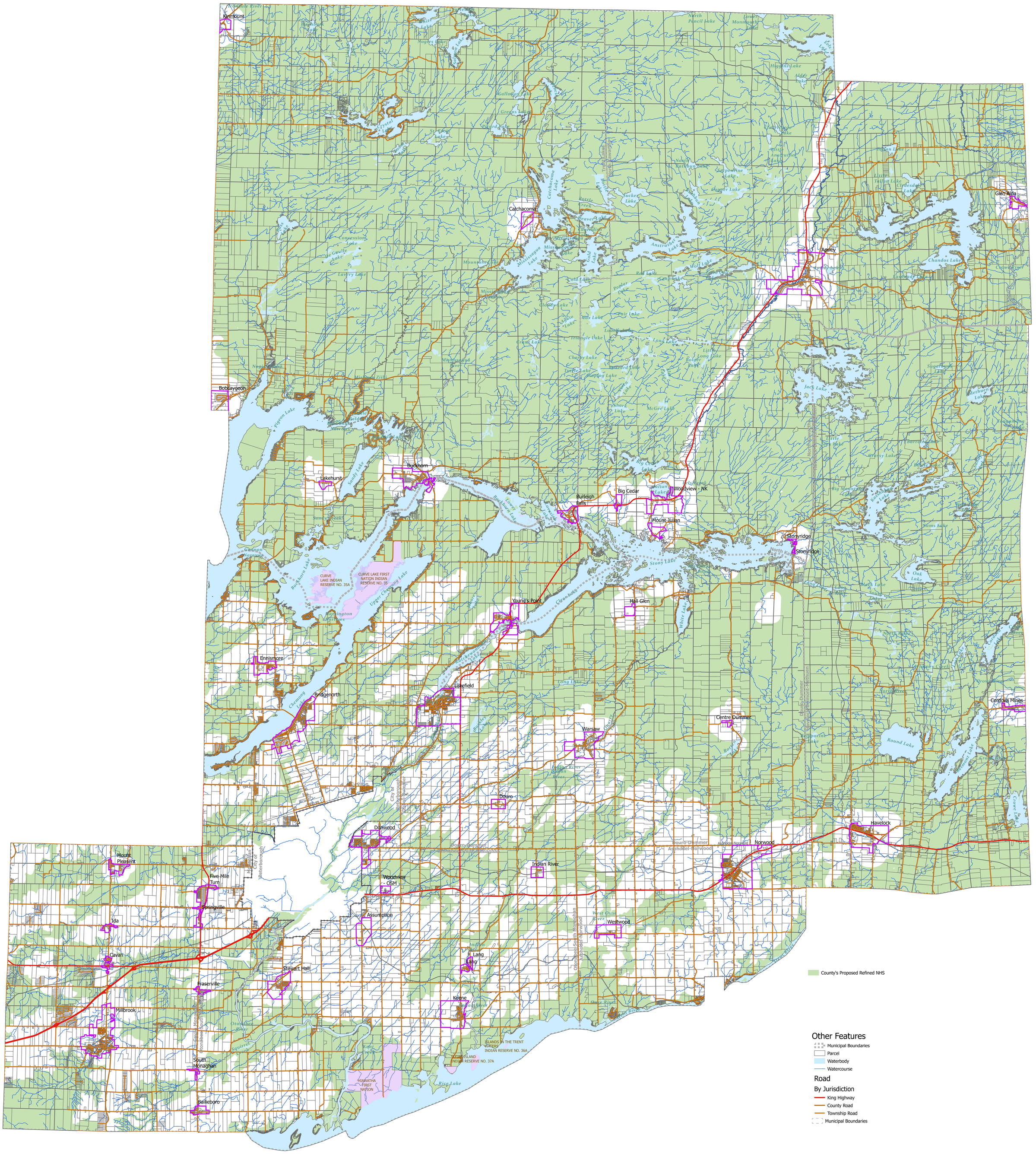
This map should not be relied on as a precise indicator of routes or locations, nor as a guide to navigation. The Ontario Ministry of Natural Resources and Forestry(OMNRF) shall not be liable in any way for the use of, or reliance upon, this map or any information on this map.

© Copyright for Ontario Parcel data is held by King's Printer for Ontario and its licensors and may not be reproduced without permission. THIS IS NOT A PLAN OF SURVEY.

Imagery Copyright Notices: DRAPE © Aéro-Photo (1961) Inc., 2008 - 2009
GTA 2005 / SWOOP 2006 / Simcoe-Muskoka-Dufferin © FirstBase Solutions, 2005 / 2006 / 2008
© King's Printer for Ontario, 2023

APPENDIX 3-2

Natural Heritage System Map, County of Peterborough



Schedule
Land Use Plan - County's Proposed Refined NHS
County of Peterborough

Scale 1:90,000

Credits: This map is illustrative only. Do not rely on this map for legal administrative purposes. Do not rely on it as being a precise indicator of routes, locations of features, or as a guide to navigation. This map may contain cartographic errors or omissions.

The information on this map adheres to the County of Peterborough's Disclaimer and Terms of Use & Disclaimers as outlined on the Peterborough County website, https://www.ptbocounty.ca/en/governing/terms-of-use---disclaimers.aspx.

Map data compiled from various sources.

Projection: Universal Transverse Mercator, Zone 17
Datum: North American Datum 1983

Published (c) 2022.

Date Saved: 4/29/2022 3:50 PM Date Printed: 4/29/2022 3:53 PM

APPENDIX 4

ARCHAEOLOGICAL ASSESSMENT, ASI



Stage 1 Archaeological Assessment Cavan-Monaghan Water and Wastewater Master Servicing Study (Part of Lots 10-13, Concession 5, Former Township of Cavan, County of Durham) Township of Cavan Monaghan, County of Peterborough, Ontario

Draft Report

Prepared for:

R.V. Anderson Associates Limited

2001 Sheppard Avenue East Suite 300, Toronto ON M2J 4Z8

Archaeological Licence: P1066 (Lytle)

PIF P1066-0185-2021

Archaeological Services Inc. File: 20EA-138

18 October 2023



Executive Summary

Archaeological Services Inc. (ASI) was contracted by R.V. Anderson Associates Limited to conduct a Stage 1 Archaeological Assessment (Background Research) as part of the Water and Wastewater Master Servicing Study in the Township of Cavan Monaghan, County of Peterborough. This project involves the water and wastewater infrastructure needs proposed to accommodate additional growth in the Millbrook Urban Settlement Area, with a focus on currently undeveloped areas "Existing Urban Employment Area" and "Special Development Area", as well as a 50-hectare parcel of land outside the Millbrook boundary "Suggested Additional Residential Area". The Stage 1 Study Area includes all three proposed development areas.

The Stage 1 background study determined that 20 sites are within one kilometre of the Study Area and 11 sites are within the Existing Urban Employment Area and the Suggested Additional Residential Area. The Gardiner's United Church Cemetery is within the Existing Urban Employment Area. The entirety of the Special Development Area has been previously assessed and cleared of archaeological concern. Both the Existing Urban Employment Area and the Suggested Additional Residential Area require further archaeological assessment. Sites BaGo-44, BaGo-45, BaGo-46, and BaGo-47 are within the Suggested Additional Residential Area and are considered to have further CHVI requiring Stage 3 assessment.

The following is a summary of our recommendations:

1 Parts of the Existing Urban Employment Area and the Suggested Additional Residential Area exhibit archaeological potential. These lands require Stage 2 archaeological assessment by test pit survey or pedestrian survey at five metre intervals, prior to any proposed construction activities.

2 BaGo-44, BaGo-45, BaGo-46, and BaGo-47 are within the Suggested Additional Residential Area and are considered to retain further cultural heritage value or interest. The sites must be specific to Stage 3 Site-Specific

Assessment prior to any proposed impacts to the area, as per the recommendations made by YNAS 2017 (P156-0254-2016) presented below:

3 Gardiner United Church Cemetery is within the Existing Urban Employment Area. All Cemetery lands should be avoided by project designs. A Stage 3 Cemetery investigation is not required for the well defined northern, eastern, and southern limits. The County Road 10 right-of-way lands adjacent Gardiner United Church Cemetery have potential for unmarked or shifted burials. However, a ditch has been created in these lands and there is buried utility infrastructure which preclude ASI from safely conducting mechanical topsoil removal. ASI recommends that any project impacts adjacent Gardiner United Church Cemetery be subject to Cemetery Investigation by archaeological construction monitoring.

4 The road right-of-ways in the Existing Urban Employment Area and the Suggested Additional Residential Area exhibit low archaeological potential and have likely been subjected to deep soil disturbance events due to typical road construction. However since no property inspection was conducted, these lands beyond the paved road bed must be subject to visual inspection to confirm the extent of disturbance during future Stage 2 survey.

5 The entirety of the Special Development Area does not retain archaeological potential due to being previously assessed and being cleared of further archaeological concern. These lands do not require further archaeological assessment.

6 During any further archaeological assessments, meaningful engagement with Indigenous communities should be conducted, as outlined in Section 3.5 of the S & G and *Engaging Aboriginal Communities in Archaeology Technical Bulletin*.

Project Personnel

- **Senior Project Manager**: Lisa Merritt, MSc. (P094) Partner, Director, Environmental Assessment Division
- **Division Coordinator**: Katrina Thach, BA Hons. (R1225), Associate Archaeologist, Assistant Manager, Environmental Assessment Division
- **Project Administrator**: Catherine Kitchen, BA (R1364), Archaeologist, Project Administrator, Environmental Assessment Division
- **Project Director**: Jessica Lytle, MSc (P1066), Lead Archaeologist, Technical Writer and Fieldwork Coordinator, Environmental Assessment Division
- **Project Manager**: Eliza Brandy, MA (R1109), Associate Archaeologist, Project Manager, Environmental Assessment Division
- **Report Preparation**: Eliza Brandy; Danielle Bella, Hon. BA, Archaeologist, Technical Writer, Environmental Assessment Division
- **Graphics**: Andrew Clish, BES (P046), Senior Archaeologist, Senior Field Director, Laboratory and Fieldwork Services, Operations Division; Carolyn Nettleton, BA, Archaeologist, GIS Technician, Operations Division
- **Report Reviewer**: Lisa Merritt

Table of Contents

Executive Summary 1
Project Personnel 3
1.0 Project Context 7
1.1 Development Context 7
1.2.2 Treaties and Traditional Territories 8
1.2 Historical Context 9
1.2.1 Indigenous Land Use and Settlement 9
1.2.3 Post-Contact Settlement 11
1.2.4 Historical Map Review 14
1.2.5 Aerial and Orthoimagery Review 16
1.3 Archaeological Context 17
1.3.1 Current Land Use and Field Conditions 17
1.3.2 Geography 18
1.3.2 Previous Archaeological Research 20
1.3.3 Previous Archaeological Assessments 23
2.0 Analysis and Conclusions 27
2.1 Analysis of Archaeological Potential 28
2.1.1 Cemetery Assessment 29
2.2 Conclusions 32
3.0 Recommendations 32
4.0 Legislation Compliance Advice 35
5.0 Bibliography and Sources 36
6.0 Images 42
7.0 Maps 46
8.0 Appendix A: Cemetery Plans 59

List of Tables

Table 1: Registered Sites within the Subject Property 21

List of Images

Image 1: View of Ferguson grave marker (Google Maps, 2018). 42
Image 2: View of Gray grave marker and cement support with utility boxes in ditched right-of-way (Google Maps, 2018). 42
Image 3: View of Peel grave marker (Google Maps, 2018). 43
Image 4: View of grave makers along western boundary along ditched right-of-way (Google Maps, 2018). 43
Image 5: View of grave markers and Gardiner's Cemetery decorative marker around previous gate location (Google Maps, 2018). 44
Image 6: View of Burnham grave marker and red stake marker for line between old and new cemetery grounds (Google Maps, 2018). 44
Image 7: View of Gardiner's Cemetery northern limit (Google Maps, 2018). 45

List of Figures

Figure 1: Study Area Location 46
Figure 2: Study Area (Approximate Location) Overlaid on the 1861 Tremaine's Map of Durham County. 47
Figure 3: Study Area (Approximate Location) Overlaid on the 1878 Illustrated Historical Atlas of Durham County. 48
Figure 4: Study Area (Approximate Location) Overlaid on the 1932 DMD Topographic Mapping Rice Lake Sheet. 49
Figure 5: Study Area (Approximate Location) Overlaid on the 1985 NTS Rice Lake Sheet. 50
Figure 6: Study Area (Approximate Location) Overlaid on the 1954 Aerial Photography. 51
Figure 7: Study Area - Surficial Geology. 52
Figure 8: Study Area - Soil Drainage. 53
Figure 9: Gardiner's Cemetery (2018 Google Imagery). 54
Figure 10: Study Area – Results of Stage 1 (Key Map). 55
Figure 11: Existing Urban Employment Area – Results of Stage 1 (Sheet 1). 56

Figure 12: Suggested Additional Residential Area – Results of Stage 1 (Sheet 2). 57
Figure 13: Special Development Area – Results of Stage 1 (Sheet 3). 58
Figure 14: Gardiner's Cemetery Burial Plots and Boundaries. 59
Figure 15: Gardiner's Cemetery Burial Plots and Boundaries. 60

1.0 Project Context

Archaeological Services Inc. (ASI) was contracted by R.V. Anderson Associates Limited to conduct a Stage 1 Archaeological Assessment (Background Research) as part of the Water and Wastewater Master Servicing Study in the Township of Cavan Monaghan, County of Peterborough. This project involves the water and wastewater infrastructure needs proposed to accommodate additional growth in the Millbrook Urban Settlement Area, with a focus on currently undeveloped areas "Existing Urban Employment Area" and "Special Development Area", as well as a 50-hectare parcel of land outside the Millbrook boundary "Suggested Additional Residential Area" (Figure 1). The types of infrastructure required for the servicing may include a new municipal well, watermain extensions, a new water tower, sanitary collection system extensions and/or wastewater treatment plant expansion. The Stage 1 Study Area includes all three proposed development areas.

All activities carried out during this assessment were completed in accordance with the *Ontario Heritage Act* (1990, as amended in 2023) and the 2011 *Standards and Guidelines for Consultant Archaeologists* (S & G), administered by the Ministry of Citizenship and Multiculturalism (MCM 2011).

1.1 Development Context

All work has been undertaken as required by the *Environmental Assessment Act, RSO* (Environmental Assessment Act, R.S.O. c. E.18, 1990 as amended 2022) and regulations made under the Act, and are therefore subject to all associated legislation. This project is being conducted in accordance with the *Municipal Class Environmental Assessment* process (Municipal Engineers Association, 2023).

Authorization to carry out the activities necessary for the completion of the Stage 1 Archaeological Assessment was granted by R.V. Anderson & Associates Limited on November 30, 2020.

1.2.2 Treaties and Traditional Territories

The Study Area is within Treaty 20 the Rice Lake Purchase of 1818, and on the traditional territory of the Michi Saagiig and Chippewa Nations, collectively known as the Williams Treaties First Nations, including the Mississaugas of Alderville First Nation, Curve Lake First Nation, Hiawatha First Nation, Scugog Island First Nation and the Chippewas of Beausoleil First Nation, Georgina Island First Nation and the Rama First Nation (Williams Treaties First Nations, 2017). The Study Area is also within the area of interest of the Huron-Wendat Nation.

A large portion of land east and south of Lake Simcoe was negotiated on November 5, 1818 in the interests of encouraging British settlement north of Lake Ontario and included all of Peterborough and Victoria Counties, two small parts of Northumberland, the north half of Durham, the northern tip of Ontario County, and those parts of Muskoka and Haliburton lying south of the 45th parallel. The land in question encompassed some 1.95 million acres (789,500 ha) of land and was negotiated with Mississauga nations in the Rice Lake area, although the treaty describes them as “Chippewa” (Crown-Indigenous Relations and Northern Affairs, 2016). In payment for these lands, the Crown agreed to pay the value of £749.00 currency in goods annually to the nations.

This treaty was subsequently included as part of the Williams Treaties in October and November of 1923. The purpose of the treaties was to address lands that had not been surrendered through previous treaties and no negotiations preceded the signing of the Williams Treaties in 1923, with a commission established by the Federal and Provincial governments led by Treaty Commissioner A. S. Williams.

Through the Williams Treaties, the Crown received three tracts of land occupying approximately 52,000 square kilometres of land. The territory covered by the Williams Treaties stretched from the northern shore of Lake Ontario between Trent River and the Don River to Lake Simcoe and the eastern shore of Georgian Bay to the French River and Lake Nipissing and was bounded to the north and east by the Ottawa River. Specifically, the Williams Treaties includes lands originally covered by the John Collins Purchase (1785), the Johnson-Butler Purchase (1787), the Rice Lake Purchase (Treaty #20 – 1818), and the Robinson-

Huron Treaty (Treaty #61 – 1850). In exchange, the signing nations received a one-time payment of $25 for each band member as well as $233,425.00 to be divided amongst the four Mississauga nations and $233,375.00 to be divided amongst the three Chippewa nations.

However, the seven signatory nations claimed that the original terms of the treaty were not honoured when it was written by the Crown, which included the right to fish and hunt within the treaty lands and did not include the islands along the Trent River (Surtees 1986; Williams Treaties First Nations 2017). In 1992, the seven Williams Treaties First Nations filed a lawsuit against the federal government — Alderville Indian Band et al v. Her Majesty the Queen et al — seeking compensation for the 1923 land surrenders and harvesting rights. This case went to trial in 2012 and in September 2018 the Federal and Provincial governments announced that they had successfully reached a settlement with the seven member nations. The settlement includes financial compensation of $1.11 billion to be divided amongst the nations as well as an entitlement for each First Nation to add up to 11,000 acres to their reserve lands and the recognition by the Crown of the First Nation's Treaty rights to harvest on Crown lands within the treaty territories.

1.2 Historical Context

The purpose of this section, according to the S & G, Section 7.5.7, Standard 1, is to describe the past and present land use and the settlement history and any other relevant historical information pertaining to the Study Area. A summary is first presented of the current understanding of the Indigenous land use of the Study Area. This is then followed by a review of the historical Euro-Canadian settlement history.

1.2.1 Indigenous Land Use and Settlement

Southern Ontario has been occupied by human populations since the retreat of the Laurentide glacier approximately 13,000 years before present (B.P.) (Ferris, 2013). Populations at this time would have been highly mobile, inhabiting a boreal-parkland similar to the modern sub-arctic. By approximately 10,000 B.P.,

the environment had progressively warmed (Edwards & Fritz, 1988) and populations now occupied less extensive territories (Ellis & Deller, 1990).

Between approximately 10,000-5,500 B.P., the Great Lakes basins experienced low-water levels, and many sites which would have been located on those former shorelines are now submerged. This period produces the earliest evidence of heavy wood working tools, an indication of greater investment of labour in felling trees for fuel, to build shelter, and watercraft production. These activities suggest prolonged seasonal residency at occupation sites. Polished stone and native copper implements were being produced by approximately 8,000 B.P.; the latter was acquired from the north shore of Lake Superior, evidence of extensive exchange networks throughout the Great Lakes region. The earliest evidence for cemeteries dates to approximately 4,500-3,000 B.P. and is indicative of increased social organization, investment of labour into social infrastructure, and the establishment of socially prescribed territories (Brown, 1995, p. 13; Ellis et al., 1990, 2009).

Between 3,000-2,500 B.P., populations continued to practice residential mobility and to harvest seasonally available resources, including spawning fish. The Woodland period begins around 2,500 B.P. and exchange and interaction networks broaden at this time (Spence et al., 1990, pp. 136, 138) and by approximately 2,000 B.P., evidence exists for small community camps, focusing on the seasonal harvesting of resources (Spence et al., 1990, pp. 155, 164). By 1,500 B.P. there is macro botanical evidence for maize in southern Ontario, and it is thought that maize only supplemented people's diet. There is earlier phytolithic evidence for maize in central New York State by 2,300 B.P. – it is likely that once similar analyses are conducted on Ontario ceramic vessels of the same period, the same evidence will be found (Birch & Williamson, 2013, pp. 13–15). As is evident in detailed Anishinaabek ethnographies, winter was a period during which some families would depart from the larger group as it was easier to sustain smaller populations (Rogers, 1962). It is generally understood that these populations were Algonquian-speakers during these millennia of settlement and land use.

From the beginning of the Late Woodland period at approximately 1,000 B.P., lifeways became more similar to that described in early historical documents. Between approximately 1000-1300 Common Era (C.E.), the communal site is replaced by the village focused on horticulture. Seasonal disintegration of the community for the exploitation of a wider territory and more varied resource

base was still practised (Williamson, 1990, p. 317). By 1300-1450 C.E., this episodic community disintegration was no longer practised and populations now communally occupied sites throughout the year (Dodd et al., 1990, p. 343). By the mid-sixteenth century these small villages had coalesced into larger communities (Birch et al., 2021). Through this process, the socio-political organization of the First Nations, as described historically by the French and English explorers who first visited southern Ontario, was developed.

By 1600 C.E., the communities within Simcoe County had formed the Confederation of Nations encountered by the first European explorers and missionaries. In the 1640s, devastating epidemics and the traditional enmity between the Haudenosaunee and the Huron-Wendat (and their Algonquian allies such as the Nippissing and Odawa) led to the dispersal of the Huron-Wendat from southern Ontario. Shortly afterwards, the Haudenosaunee established a series of settlements at strategic locations along the trade routes inland from the north shore of Lake Ontario. By the 1690s however, the Anishinaabeg were the only communities with a permanent presence in southern Ontario. From the beginning of the eighteenth century to the assertion of British sovereignty in 1763, there was no interruption to Anishinaabeg control and use of southern Ontario.

1.2.3 Post-Contact Settlement

Historically, the Study Area is located in the Former Township of Cavan, County of Durham in Lots 10-13 & Concession 5.

The S & G stipulates that areas of early Euro-Canadian settlement (pioneer homesteads, isolated cabins, farmstead complexes), early wharf or dock complexes, pioneer churches, and early cemeteries are considered to have archaeological potential. Early historical transportation routes (trails, passes, roads, railways, portage routes), properties listed on a municipal register or designated under the Ontario Heritage Act or a federal, provincial, or municipal historic landmark or site are also considered to have archaeological potential

For the Euro-Canadian period, the majority of early nineteenth century farmsteads (i.e., those that are arguably the most potentially significant resources and whose locations are rarely recorded on nineteenth century maps) are likely to be located in proximity to water. The development of the network of concession

roads and railroads through the course of the nineteenth century frequently influenced the siting of farmsteads and businesses. Accordingly, undisturbed lands within 100 metres of an early settlement road are also considered to have potential for the presence of Euro-Canadian archaeological sites.

The first Europeans to arrive in the area were transient merchants and traders from France and England, who followed Indigenous pathways and set up trading posts at strategic locations along the well-traveled river routes. All of these occupations occurred at sites that afforded both natural landfalls and convenient access, by means of the various waterways and overland trails, into the hinterlands. Early transportation routes followed existing Indigenous trails, both along the lakeshore and adjacent to various creeks and rivers (ASI 2006).

Cavan Township

The Township of Cavan was surveyed in 1816-1817 and John Deyell assisted surveyor Samuel Wilmot in the task. The first Euro-Canadian to settle in the township was John Deyell in 1816. Deyell had come from County Monaghan in Ireland, and he acquired land opposite of the present-day hamlet of South Monaghan. At that location, he constructed the township's first tavern. Deyell also built the township's first grist and sawmill at present-day Millbrook. This was later replaced with another mill, Needler's flour mill, which was destroyed by fire. A subsequent mill was in operation at the location until 1966 (Mika & Mika, 1977).

By 1830, the township had four mills, five stores, and two distilleries. The first church was a log structure, St. John's Anglican, in the hamlet of Ida. The land for the first schoolhouse was donated by settler, John Deyell. The main industry of the township was agriculture, and an Agricultural Society was organized as early as 1859. It continues to be a mainstay for those living within the township. The township had been part of the United Counties of Northumberland and Durham until 1974 (Mika & Mika, 1977). The Township of Cavan amalgamated with the Township of North Monaghan and the Village of Millbrook in 1997 (*Municipal Restructuring Activity Summary Table*, 2018).

Millbrook

In 1816, John Deyell came to the area from Ireland and constructed a grist mill by a brook, giving Millbrook its name. Another early Euro-Canadian settler was John Thorn, who made bricks and burned limestone for lime to construct his house. Thorn also built the first mill to run by hand to grind corn (Mika & Mika, 1981).

Millbrook grew into a prosperous village with many stores and other businesses including Needler's three-storey flour mill, McIvor's mill for oatmeal, a cooper shop, and a pump factory. The New Connexion Church was the first church in the village, followed by the Anglican Parish of Cavan organizing in 1819. In 1881, the cornerstone of the Methodist Church was laid (Mika & Mika, 1981).

The village's Town Hall was constructed in 1877 and the present building was built in 1880, replacing the first which was destroyed by fire. For a time, the old Town Hall was used as the schoolhouse, until a red brick school was built on Union Street. This building burned down in 1887 and a white brick school was opened in 1890. In 1880, Millbrook was incorporated as a village. The population of the community was 1,500 at the time. The library was organized by David Hampton in 1894 with the assistance of the Mechanics' Institute. The following year it became a free Public Library (Mika & Mika, 1981).

The Village of Millbrook amalgamated with the Township of Cavan and the Township of North Monaghan in 1997 (*Municipal Restructuring Activity Summary Table*, 2018).

Gardiner's United Church Cemetery

The Gardiner's United Church Cemetery is an active cemetery located at 1097 County Road 10 on Lot 13, Concession 6 in the Township of Cavan. The church appears on the property of J. & R. Gardner on the 1861 *Tremaine's Map of Durham County*, however it is not until the 1878 *Illustrated Historical Atlas of Durham County* that the cemetery is depicted south of the church on the property of Ralph Gardiner (Tremaine, 1861; Belden, 1878). Copies of the Gardiner's Cemetery plan and burial layout from 1920 were provided by the Bereavement Authority of Ontario (see Appendix A). The Gardiners Cemetery burial layout plan

shows the north fence line, the west fence line and gate, the east fence line, and the line between older and newer cemetery grounds to the south. A tool house is indicated against the eastern fence line within the cemetery, and grave markers are illustrated right up to the fence line on all sides.

Midland Railway

This railroad began in 1846 as the Peterborough and Port Hope Railway Company and was to run from Port Hope to Peterborough around Rice Lake. Initially growth of the rail line was slow due to financial issues and a new charter was issued in 1854 for the Port Hope, Lindsay, and Beaverton Railway Company. Four years later the company constructed a branch line from Millbrook to Peterborough. The railway changed its name to the Midland Railway of Canada in 1869 when it planned for expansion to Beaverton and beyond. During the 1880s, following a decade of growth the company was in financial difficulties as were other rail lines and in 1882, a merger of six rail road companies under the Midland Railway of Canada saw its total mileage swell from 144 miles to 465 miles (Toronto Railway Historical Association, 2020).

The abandonment of the original mainline between Omemee and Millbrook Junction occurred in 1882 when the company decided to build a direct line between Peterborough and Omemee. The company was later taken over by the Grand Trunk Railroad in 1893 and subsequently the Canadian National Railway in 1923 (Andreae, 1997; Toronto Railway Historical Association, 2020).

1.2.4 Historical Map Review

The 1861 *Tremaine's Map of Durham County* (Tremaine, 1861) and the 1878 *Illustrated Historical Atlas of Durham County* (Belden, 1878) were examined to determine the presence of historic features within the Study Area during the nineteenth century (Figures 2-3).

It should be noted, however, that not all features of interest were mapped systematically in the Ontario series of historical atlases, given that they were financed by subscription, and subscribers were given preference with regard to

the level of detail provided on the maps. Moreover, not every feature of interest would have been within the scope of the atlases.

Nineteenth-century mapping shows the Existing Urban Employment Area, Suggested Additional Residential Area, and Special Development Area are within a rural agricultural context. County Road 10, Larmer Lane, King Street, and Fallis Line are shown as historical road allowances. Millbrook is labelled to the southeast. A watercourse is shown intersecting the Existing Urban Employment Area and County Road 10 south of a Wesleyan Methodist church. A schoolhouse is depicted northwest of the intersection of County Road 10 and Larmer Line. The Midland Railroad is illustrated curving from the south to the northwest through the Suggested Additional Residential Area. A structure is shown adjacent the northern limits of the Suggested Additional Residential Area on the property of Patrick Maguire, and adjacent the western limits on the property of James Hunter. Dark shading on the mapping depicts a small development at Queen Street and Hunter Street in the Special Development Area.

The 1878 map shows growth of Millbrook and within the south end of the Special Development Area. Six structures are shown within the Existing Urban Employment Area, and a cemetery is depicted south of the church. A structure is shown adjacent the Existing Urban Employment Area at the northwest corner of County Road 10 and Fallis Lane. Four structures are shown within the Suggested Additional Residential Area and one adjacent to the west.

The 1932 Department of Militia and Defence (DMD) Bolton Sheet topographic mapping and 1985 National Topographic System (NTS) Rice Lake Sheets (Department of National Defence, 1932; Department of Energy, Mines and Resources, 1985) were examined to determine the extent and nature of development and land uses within the Study Area (Figures 4-5).

The twentieth-century mapping continues to depict the Existing Urban Employment Area, Suggested Additional Residential Area, and Special Development Area in a rural agricultural context outside of the village of Millbrook.

The 1932 topographic map illustrates County Road 21 and County Road 10 as improved roads under 20 feet wide. The other roads are depicted as dirt roads. The Midland Railway is labelled as an abandoned line. The areas are shown as being treed. The Gardiner's United Church Cemetery is bordered to the north by a house and its associated barn. Opposite the cemetery across the road, as well as to the south past the bridge over the creek are another two sets of a house and barn. A lane extends north from Fallis Lane into the Suggested Additional Residential Area where there is a house and barn, and two lanes extend south with a house and barn each. A long laneway extends north from King Street, which enters the southern portion of the Suggested Additional Residential Area to the west of the abandoned line. A house and barn are at its end just past a bridge over a watercourse. Five structures are within/adjacent the Special Development Area along Queen Street and Hunter Street.

The 1985 map depicts a hydro corridor intersecting the northern portion of the Existing Urban Employment Area. The limits of Millbrook are outlined, the Special Development Area partially within its limits. The former penitentiary is illustrated within the Special Development Area. Some additional buildings have been constructed east of County Road 10 and north of the tributary of Baxter Creek, as well as an additional building south of Fallis Line.

1.2.5 Aerial and Orthoimagery Review

The 1954 aerial photography (Hunting Survey Corporation Limited, 1954) shows the agricultural context of the Existing Urban Employment Area, Suggested Additional Residential Area, and Special Development Area (Figure6). A patchwork of agricultural fields and tree lines are clearly visible.

Available Google satellite imagery from 2009 to 2020 was reviewed. Within the Special Development Area, demolition of the penitentiary occurs in 2015, with the entirety of the building removed by 2016. The review indicates the Existing Urban Employment Area and the Suggested Additional Residential Area have remained relatively unchanged.

1.3 Archaeological Context

This section provides current land use and field conditions, its environmental characteristics (including drainage, soils or surficial geology and topography, etc.), and background research pertaining to previous archaeological fieldwork conducted within and in the vicinity of the Study Area. Three sources of information were consulted to provide information about previous archaeological research: the site record forms for registered sites available online from the MCM through "Ontario's Past Portal"; published and unpublished documentary sources; and the files of ASI.

1.3.1 Current Land Use and Field Conditions

The Study Area focuses on two areas within the Millbrook boundary that are not currently developed, as well as a third area including 50 hectares of land that are outside the Millbrook boundary that are of interest to the Township. These areas have been identified as "Existing Urban Employment Area", "Special Development Area", and "Suggested Additional Residential Area".

The Existing Urban Employment Area consists largely of agricultural fields west and east of the north-south oriented County Road 10. The road is a two-lane roadway with wide gravel shoulders. It lacks curbs and sidewalks and has drainage ditches within the right-of-ways. Houses, barns and outbuildings, as well as the. Gardiner's United Church Cemetery are within the Existing Urban Employment Area.

The Special Development Area consists of open grassed land. Trees border the footprint of the previously existing penitentiary.

The Suggested Additional Residential Area consists of agricultural fields north and south of Fallis Lane, with a few homes and outbuildings. Fallis Lane is an unmarked two-lane roadway which follows an east-west orientation, with grassed ditched right-of-ways for drainage. It lacks curbs and sidewalks.

1.3.2 Geography

In addition to the known archaeological sites, the state of the natural environment is a helpful indicator of archaeological potential. Accordingly, a description of the physiography and soils are briefly discussed for the Study Area.

The S & G stipulates that primary water sources (lakes, rivers, streams, creeks, etc.), secondary water sources (intermittent streams and creeks, springs, marshes, swamps, etc.), ancient water sources (glacial lake shorelines indicated by the presence of raised sand or gravel beach ridges, relic river or stream channels indicated by clear dip or swale in the topography, shorelines of drained lakes or marshes, cobble beaches, etc.), as well as accessible or inaccessible shorelines (high bluffs, swamp or marsh fields by the edge of a lake, sandbars stretching into marsh, etc.) are characteristics that indicate archaeological potential.

Water has been identified as the major determinant of site selection and the presence of potable water is the single most important resource necessary for any extended human occupation or settlement. Since water sources have remained relatively stable in Ontario since 5,000 BP (Karrow & Warner, 1990, p. Figure 2.16), proximity to water can be regarded as a useful index for the evaluation of archaeological site potential. Indeed, distance from water has been one of the most commonly used variables for predictive modeling of site location.

Other geographic characteristics that can indicate archaeological potential include elevated topography (eskers, drumlins, large knolls, and plateaux), pockets of well-drained sandy soil, especially near areas of heavy soil or rocky ground, distinctive land formations that might have been special or spiritual places, such as waterfalls, rock outcrops, caverns, mounds, and promontories and their bases. There may be physical indicators of their use, such as burials, structures, offerings, rock paintings or carvings. Resource areas, including; food or medicinal plants (migratory routes, spawning areas) are also considered characteristics that indicate archaeological potential (S & G, Section 1.3.1).

The Existing Urban Employment Area, the Suggested Additional Residential Area, and the Special Development Area are located within the sand plains of the

Peterborough Drumlin Field physiographic region of southern Ontario (Chapman & Putnam, 1984). The Special Development Area is also within the drumlinized till plains. The Peterborough Drumlin Field extends from Simcoe County east to Hastings County and is generally characterized by rolling till plains overlying limestone bedrock. The region is approximately 4,532 km^2 and contains over 3000 drumlins in addition to many other drumlinoid hills and surface flutings (Chapman and Putnam 1984:169). The drumlins are composed of highly calcareous till but there are local differences in composition. The till plains of the regions were formed during the retreat of the Lake Ontario ice lobe of the Laurentide glacier, and they indicate directionality of glacial advance and retreat. Till is produced from the advance of continental glacial ice. Soil and rock is carried forward by the ice, mixed and milled, producing a heterogeneous soil which is characteristic of glaciations (Chapman and Putnam 1984:10 and 16).

Figure 7 depicts surficial geology for the Existing Urban Employment Area, Suggested Additional Residential Area, and Special Development Area. The surficial geology mapping demonstrates that the Existing Urban Employment Area is underlain by stone-poor, sandy silt to silty sand-textured till on Paleozoic terrain, fine-textured glaciolacustrine deposits of silt and clay, minor sand and gravel, massive to well laminated, by coarse-textured glaciolacustrine deposits of sand, gravel, minor silt and clay, foreshore and basinal deposits, and modern alluvial deposits of clay, silt, sand, gravel, and may contain organic remains. The Suggested Additional Residential Area is underlain by stone-poor, sandy silt to silty sand-textured till on Paleozoic terrain and fine-textured glaciolacustrine deposits of silt and clay, minor sand and gravel, massive to well laminated. The Special Development Area is underlain by modern alluvial deposits of clay, silt, sand, gravel, which may contain organic remains, coarse-textured glaciolacustrine deposits of sand, gravel, minor silt and clay, foreshore and basinal deposits, and older alluvial deposits of clay, silt, sand, gravel and may contain organic remains. A fluvial terrace is within the northwest portion of the Special Development Area (Ontario Geological Survey, 2010).

Soils in the Existing Urban Employment Area, Suggested Additional Residential Area, and Special Development Area are depicted in Figure8. Soils in the Existing Urban Employment Area consist of Otonabee loam and Brighton gravelly sand

with good drainage, Schomberg clay loam with fair to good drainage and Bottom Land with variable drainage that is usually poor. Soils in the Suggested Additional Residential Area consist of Otonabee loam with good drainage and Lyons loam with poor drainage. Soils in the Special Development Area consist of Brighton sand with good drainage, Bottom Land with variable drainage that is usually poor and Otonabee loam steep phase with excessive drainage.

Tributaries of Baxter Creek enter the Existing Urban Employment Area and Suggested Additional Residential Area, and within 90 metres north and 50 metres south of the Special Development Area. The Existing Urban Employment Area, Suggested Additional Residential Area, and Special Development Area are within the Baxter Creek subwatershed of the Otonabee Region Watershed. The Otonabee Region Watershed supports 107,000+ residents, approximately 71% of which live within the City of Peterborough. The watershed has an area of 207 kilometres squared wetland cover, or 11%. About 15% of the watershed is forested, with the Baxter Creek subwatershed receiving the grade “B” for good cover (Otonabee Conservation, 2013, 2018).

1.3.2 Previous Archaeological Research

In Ontario, information concerning archaeological sites is stored in the Ontario Archaeological Sites Database (OASD) maintained by the MCM. This database contains archaeological sites registered within the Borden system. Under the Borden system, Canada has been divided into grid blocks based on latitude and longitude. A Borden block is approximately 13 kilometres east to west, and approximately 18.5 kilometres north to south. Each Borden block is referenced by a four-letter designator, and sites within a block are numbered sequentially as they are found. The Study Area under review is located in Borden blocks *BaGo* and *BbGo*.

According to the OASD, 20 previously registered archaeological sites are located within one kilometre of the Study Area (MCM 2023). Sites BbGo-2, BbGo-31, BbGo-34, BaGo-16, BaGo-44, BaGo-45, BaGo-46, BaGo-47, BaGo-55, BaGo-56, BaGo-57 are within the Study Area (Table 1 sites in bold). One site, BaGo-49, is within 50 metres of the Study Area (Table 1 sites in italics). Whether or not sites

within the Study Area or within 50 metres exhibit CHVI will be indicated in Table 1 or shown as not applicable (N/A) for sites beyond 50 metres from the Study Area.

Table 1: Registered Sites within the Subject Property

Borden number	Site Name	Temporal/ Cultural Affiliation	Site type	Researcher	CHVI
BaGo-16	**Clarke**	**Pre-Contact Indigenous**	**Findspot**	**Roberts 1977**	**Y**
BaGo-19	Draper	Pre-Contact Indigenous	Findspot	Roberts 1977	N/A
BaGo-41	Cluster 2	Woodland, Late	Campsite	Fischer Archaeological Consulting 2010 and 2014	N/A
BaGo-42	Millbrook H1	Euro-Canadian	Homestead	Archeoworks Inc 2014	N/A
BaGo-44	**n/a**	**Euro-Canadian**	**Farmstead; homestead**	**York North Archaeological Services 2016**	**Y**
BaGo-45	**n/a**	**Woodland**	**Camp / campsite**	**York North Archaeological Services 2016**	**Y**
BaGo-46	**n/a**	**Euro-Canadian**	**Cabin**	**York North Archaeological Services 2016**	**Y**
BaGo-47	**n/a**	**Euro-Canadian**	**Cabin**	**York North Archaeological Services 2016**	**Y**
BaGo-49	*Maguire's Castle*	*Euro-Canadian*	*Farmstead*	*AMICK 2017, Irving Heritage Inc 2019*	*N*

Borden number	Site Name	Temporal/ Cultural Affiliation	Site type	Researcher	CHVI
BaGo-50	Patrick Maguire	Euro-Canadian	Other	AMICK 2017	N/A
BaGo-53	Grace	Euro-Canadian	Unknown	Golder Associates Ltd 2018	N/A
BaGo-54	John Ball	Euro-Canadian	Burial	Golder Associates Ltd 2018	N/A
BaGo-55	**Tenant**	**Other**	**Unknown**	**Irving Heritage Inc 2020**	**N**
BaGo-56	**Tenant Knoll**	**Other**	**Unknown**	**Irving Heritage Inc 2020**	**N**
BaGo-57	**Tenant Pond**	**Other**	**Unknown**	**Irving Heritage Inc 2020**	**N**
BbGo-1	Bert Morton	Woodland	Unknown	Roberts 1977	N/A
BbGo-2	**Cheshire**	**Pre-Contact Indigenous**	**Unknown**	**Roberts 1977**	**Y**
BbGo-30	Tenant Field	Other	Unknown	Irving Heritage Inc 2020	N/A
BbGo-31	**Tenant Scatter**	**Other**	**Unknown**	**Irving Heritage Inc 2020**	**N**
BbGo-34	**McNish**	**Other**	**Unknown**	**Irving Heritage Inc 2020, 2022**	**N**

See *Supplementary Documentation* for detailed location information.

Sites BaGo-16, BaGo-19, BbGo-1, and BbGo-2 were identified through background research by Arthur Roberts in 1976 and 1977, and ASI notes that Cultural Heritage Value or Interest (CHVI) has not been demonstrated by Stage 2 survey or by a cultural heritage resource assessment. These sites should be treated as site leads going forward until Stage 2 survey is conducted.

1.3.3 Previous Archaeological Assessments

ASI reviewed previous archaeological assessments that detail fieldwork within 50 metres of the Study Area. Only those specific archaeological assessments of direct relevance to the present undertaking will be included here:

(AMICK Consultants Ltd., 2019a) Stage 1-2 Archaeological Property Assessment Millbrook North Part of Lots 11 and 12, Concession 6 and Part of Lot 12 Concession 5 (Geographic Township of Cavan, County of Durham), Township of Cavan-Millbrook-North Monaghan, County of Peterborough [P058-1580-2017, formerly P1024-0246-2017]

This project was overlapping the current Suggested Additional Residential Area and Existing Urban Employment Area. Test pit and pedestrian surveys were conducted at five metre intervals. The historic domestic occupation scatter of the Patrick MaGuire's Castle Site (BaGo-49) was encountered within the area of farm complex lawn area and surrounding ploughed lands of Lot 12 Concession 6. The assemblage of 1245 artifacts covered an area of 125 metres northwest-southeast by 220 metres northeast to southwest. The Patrick MaGuire's Castle Site (BaGo-49) was determined to date from 1854 to 1956 when the brick house burnt down. A Stage 3 Site-Specific Assessment was recommended.

The remainder of the project area was cleared of archaeological concern.

(AMICK Consultants Ltd., 2019b) Stage 3 Site-Specific Assessment Patrick MaGuire's Castle Site (BaGo-49) Part of Lots 11 and 12, Concession 6, Part of Lot 12 Concession 5 (Geographic Township of Cavan, County of Durham), Township of Cavan-Millbrook-North Monaghan, County of Peterborough [P038-0926-2017]

A total of 4,500 artifacts were recovered during the Stage 3 assessment, with highest artifact yields clustered to the north and northwest of the twentieth-century house located on the property. This was likely built on a portion of the Patrick MaGuire "Castle" built in 1854 and destroyed in a fire in 1956. Regrading in this area was resulted in disturbed layering on top of structures and features. Features included one ash pit, one rubbish pit, an ash or rubbish pit, one unknown, and four structural features. It was determined that the artifacts mostly date to the mid to late nineteenth century into the twentieth century with a small pre-1830s component not associated with a particular layer. Stage 4 Mitigation was recommended.

(Fisher Archaeological Consulting, 2010) Project D-00596 – Former Millbrook Correctional Centre Peterborough County Archaeological Stage 2: Assessment [P042-206-2010]

This project was overlapping the entire Special Development Area. Test pit survey was conducted at five metre intervals and increased to ten metre intervals when met with disturbance. Much of the property had been disturbed by stripping of topsoil, depositing fill and shifting of topography for drainage and building construction. The Stage 2 Archaeological Assessment did result in the identification of two artifact clusters. Cluster 1 was located west of the main entrance and consists of mid-nineteenth-century artifacts. Cluster 2 was situated on the northern property boundary. It was determined that this was a Late Woodland period Indigenous site which had been impacted to some degree through sand bank excavation and erosion. Cluster 1 and Cluster 2 were recommended for Stage 3 Archaeological Assessments before any further work while the balance of the property has been full assessed with no further archaeological concern.

(Fisher Archaeological Consulting, 2014) Project D-00596 – Former Millbrook Correctional Centre Part of Lot 10, Concession 5, (Geographic Township of Cavan), Municipality of Cavan Monaghan Millbrook, Peterborough County Archaeological Stage 3: Site-specific Assessment. [P042-251-2011]

The Stage 3 Site Specific Archaeological Assessment of Cluster 1 and Cluster 2 was conducted in 2011. The Stage 2 work had identified Cluster 1 as requiring further investigation due to the presence of nineteenth century potential artifacts within a buried topsoil below as much as 80 centimetres of fill. A total of 19 test units were excavated during the Stage 3 work, and it was ultimately determined that this buried topsoil is indeed fill, and that the area would have been wet and marshy in the nineteenth century. A section of the corduroy road from the original alignment of County Road 21 was discovered in one of the test units beneath the buried topsoil, confirming the level of fill and disturbance to the area. It was determined that Cluster 1 has been sufficiently documented and no further archaeological work is recommended in this area.

Cluster 2 (BaGo-41) is located on the ravine edge at the northern property limits. It is an Indigenous site from the Late Woodland period. The site may be substantial, but the testing of this site was restricted by modern boundaries (i.e. the property fence line), so its extent to the east was not determined. It may continue on the property to the east. It is unknown whether it is a small camp or a village. The presence of pipes, pottery, wood working tools, and scrapers indicates that this is not a specialized site, but a habitation site with a full complement of people (men, women and children). Stage 4 Mitigation through excavation or avoidance and preservation is recommended. At the time of this report the proponent put the sale of the property on hold. Therefore, the exact nature of the Stage 4 mitigative measures were not determined. Options for Excavation and Avoidance and Long Term Protection were provided.

(Irving Heritage Inc., 2020) Stage 4 Archaeological Excavation of the Patrick MaGuire's Castle Site (BaGo-49) [P379-0259-2019]

The Stage 4 Archaeological Assessment resulted in the complete excavation of the site which was found to have two distinct settlement patterns relating to the 1822-1854 occupation of the site and the 1854 to 1900 occupation of the site. The excavation yielded a total of 4,065 artifacts and the identification of 39 cultural features. The site is primarily attributed to the initial occupation and settlement of the property by Patrick MaGuire. Given the results and conclusions of the completed Stage 4 archaeological assessment, the following recommendations were that the MaGuire's Castle Site (BaGo-49) has been fully mitigated via Stage 4 excavation and retains no further CHVI.

(Irvin Heritage Inc., 2020) Stage 1 & 2 Archaeological Assessment & Stage 3 Archaeological Assessment of the Tenant (BaGo-55), Tenant Knoll (BaGo-56), Tenant Pond (BaGo-57) and McNish (BbGo-34) Sites. [P379-0300-2020, P379-0301-2020, P379-0327-2020, P379-0325-2020, P379-0311-2020, P379-0340-2020]

A total of five Euro-Canadian archaeological sites were identified during the pedestrian survey and no archaeological resources were identified during test pitting. Of these five sites, three sites produced sufficient quantities of artifacts to require further investigation via Stage 3 excavation.

BbGo-30, BbGo-31, BaGo-55, BaGo-56, and BaGo-57 were Post-Contact dumps, and all have been sufficiently documented within the completed Stage 3 archaeological excavation. The sites retain no further CHVI. No further archaeological investigation is required.

The McNish Site (BbGo-34), a Post-Contact homestead, retains CHVI, and Stage 4 Mitigation was recommended.

The Stage 2 Survey has not been completed for a portion of the project area and is required of these lands which overlap the current Study Area.

(York North Archaeological Services Inc., 2017) A Stage 1-2 Archaeological Assessment of the Proposed Bromont Homes Subdivision, Located in Part Lot 11E, Concession 5, Cavan Township, (Former County of Durham), Now in the County of Peterborough, Ontario [P156-0254-2016]

This project was overlapping the southeastern portion of the Suggested Additional Residential Area. Stage 2 pedestrian survey and test pit survey identified four archaeological sites. Site BaGo-44 had an assemblage of 140 historic artifacts determined to date to the mid nineteenth century to the early twentieth century. Site BaGo-45 had 16 pre-contact Indigenous artifacts including three ceramic rim sherds, decorated body sherds, two groundstone fragments, three pieces of debitage and one flake; and a fragment of purple container glass showed retouching on two edges for use as a scraper. Site BaGo-46 was a historic site with 403 artifacts dating from the second half of the nineteenth century to the late nineteenth century. Site BaGo-47 was a historic site with 112 artifacts and was determined to date from the early to late nineteenth century. Sites BaGo-44, BaGo-45, BaGo-46, and BaGo-47 were recommended for Stage 3 site-specific archaeological assessment. A partial clearance was recommended with a 20 metre protective buffer zone and 50 metre monitoring zone for each site.

(Irving Heritage Inc., 2022) Stage 4 Archaeological Excavation of the McNish Site BbGo-34 Part of Lot 12, Concession 6 Township of Cavan-Millbrook-North Monaghan County of Peterborough Historic Durham County [P379-0408-2021]

While this report was not available for review, the OASD notes that the Stage 4 resulted in the complete excavation of the McNish Site BbGo-34, and the site may be considered clear of archaeological concern.

2.0 Analysis and Conclusions

The historical and archaeological contexts have been analyzed to help determine the archaeological potential of the Study Area. Results of the analysis of the Study Area background research are presented in Section 2.1.

2.1 Analysis of Archaeological Potential

The S & G, Section 1.3.1, lists criteria that are indicative of archaeological potential. The Study Area meets the following criteria indicative of archaeological potential:

- Previously identified archaeological sites within one kilometre (see Table 1);
- Water sources within 300 metres: primary, secondary, or past water source (Baxter Creek);
- Early historic transportation routes within 100 metres (Grey Road 19, Scenic Caves Road, Osler Bluff Road);
- Early settlements within 100 metres (Millbrook, Gardiner's Cemetery); and
- Well-drained soils (Otonabee loam, Brighton gravelly sand, Schomberg clay loam, Brighton sand)

According to the S & G, Section 1.4 Standard 1e, no areas within a property containing locations listed or designated by a municipality can be recommended for exemption from further assessment unless the area can be documented as disturbed. The Municipal Heritage Register was consulted and no properties within the Study Area are Listed or Designated under the Ontario Heritage Act.

The background research determined that parts of the Existing Urban Employment Area and the Suggested Additional Residential Area exhibit archaeological potential and will require Stage 2 archaeological assessment prior to any construction activities. According to the S & G Section 2.1.1, pedestrian survey is required in actively or recently cultivated fields (Figures 11-13: areas highlighted in orange). According to the S & G Section 2.1.2, test pit survey is required on terrain where ploughing is not viable, such as wooded areas, properties where existing landscaping or infrastructure would be damaged, overgrown farmland with heavy brush or rocky pasture, and narrow linear corridors up to 10 metres wide (Figures 11-12: areas highlighted in green).

Sites BaGo-44, BaGo-45, BaGo-46, and BaGo-47 are within the Suggested Additional Residential Area and are considered to have further CHVI (Figures 12-

13: area highlighted in red with black hatching). Stage 3 Site-Specific Assessment must be conducted prior to any construction activities (in accordance with the recommendations made in P156-0254-2016).

Part of the Existing Urban Employment Area has been previously assessed and cleared of archaeological concern by Irvin Heritage Inc. under PIFs P379-0300-2020, P379-0301-2020, P379-0327-2020, P379-0325-2020, P379-0311-2020, P379-0340-2020, and P379-0408-2021 (Figure 11: area highlighted in red). The entirety of the Special Development Area has been previously assessed by Fisher Archaeological Consulting in 2010 under PIF P042-206-2010 and cleared of archaeological concern (Figure 13: area highlighted in red).

The road right-of-ways in the Existing Urban Employment Area and the Suggested Additional Residential Area exhibit low archaeological potential and have likely been subjected to deep soil disturbance events due to typical road construction (Figures 11-12: areas highlighted in grey and black hatching). However since no property inspection was conducted, these lands beyond the paved road bed must be subject to visual inspection to confirm the extent of disturbance in the right-of-way during future Stage 2 survey.

2.1.1 Cemetery Assessment

The Gardiner's United Church Cemetery is within the Existing Urban Employment Area at 1097 County Road 10 and should be avoided by project designs (Figure 11: areas outlined in purple). The Gardiner's United Church Cemetery burial layout, as provided by the Bereavement Authority of Ontario (see Supplementary Documentation for a record of communications), from 1920 indicates the cemetery was once fenced in on its northern, western, and eastern limits (See Appendix A).

Along County Road 10, grave markers can be seen in Google Streetview along the western fence line. Some of the names on the grave markers visible include Ferguson, Raper, Gray, Peel, and Burnham (Images 1, 2, 3, and 6). The fence line, as drawn in the 1920 plan, has since been removed from the west side of the property and there is a visible impression where the burial layout plan indicates the former gate was (Image 5). A deep ditch carrying utilities is part of the County

Road 10 right-of-way (Images 2, 4 and 5). Crumbling cement supports can be seen underneath some of the grave markers at the top of the ditch, such as Gray's plot, while other grave markers are slumped, laid against other more stable grave markers, or placed east of their platforms (Images 1, 2, and 3). Utility boxes are seen from Google Streetview within the side of the ditch closest to the cemetery (Image 2).

The northern limit of the Gardiner's United Church Cemetery is seen from Google Streetview as being fenced (Image 7), bordering a farm at 1097 County Road 10 with a two-storey house, barns, and outbuildings. This property is in the general location of the Wesleyan Methodist church as illustrated on the 1861 map. The 1932 and 1985 topographic maps depict a house that borders the northern limits of the cemetery and its associated barn to the east, in the location of the extant house and one of the barns (Department of National Defence, 1932; Department of Energy, Mines and Resources, 1985).

The older portion of the cemetery begins at the north end of the property and ends in the south at Burnham's grave marker. A red stake can be seen on Google Streetview (Image 6) between Burnham's grave marker and the newer cemetery plots to the south. These burials were placed after 1920. The grave markers in the northwest portion of the cemetery are non-uniformly placed, while the southern and eastern portions of the cemetery have linear rows. In addition, the quantity of grave markers shown in the burial layout plan from western limit to eastern limit indicates that the cemetery has expanded eastwards.

A gate is indicated along the western limit which is parallel County Road 10. A review of Google Earth Streetview shows the fence no longer exists around the western and northern limits. The names Ferguson, Gray, and Peel are legible from Streetview and match the plan which places them as the first row against the western fence line (Images 1-3). The grave markers are shown at the top of a slope which leads into the ditched road right-of-way (Image 4). A decorative stone marker reads "Gardiners Cemetery" where the burial layout shows a gap in plots in the entrance east of the gate (Image 5). A cement support has been built into the slope around Gray's grave marker, and utilities are shown within the right-of-way (Image 2). Due to the potential of unmarked or shifted burials combined with

buried utility infrastructure within the ditched right-of-way, any project impacts along the western limits of the Gardiner's United Church Cemetery should be subject to archaeological construction monitoring (Figure 11: areas highlighted in yellow with black hatching).

The northern limit of the Gardiner's United Church Cemetery is fenced. It now borders a two-storey house and associated barn at 1097 County Road 10, as shown in twentieth century mapping, previously bordered to the north by the Wesleyan Methodist church on the 1861 *Tremaine's Map of Durham County* and the 1878 *Illustrated Historical Atlas of Durham County* (Tremaine, 1861; Belden, 1878).

The burial layout shows Burnham's grave marker is closest to the road at the southern limits in 1920. The cemetery expanded south after 1920, as marked by a red stake at the western limits (Image 6). Orthoimagery and review of the burial plan indicates that the cemetery has also expanded eastwards after 1920, based on the increased number of grave markers east of those shown on the burial layout plan as well as the juxtaposition of the older portion of the cemetery having non-uniformly placed grave markers in comparison to the linear rows of the grave markers to the south and east.

The post-1920 expansion of the cemetery to the south and east limits as well as the fenced northern limit have well defined limits and do not require Stage 3 cemetery investigation (Figure 9). A licensed archaeologist should be present on site for the duration of any impacts to monitor for the presence of unmarked burials and shall have the authority to direct construction to subsoil to identify any grave shafts that may be present (as per S & G Section 3.3.3 Standard 2) until it is confirmed that no burials are located within the Study Area, or the area is observed to be extensively and intensively disturbed. If any grave shafts are identified that are associated with this cemetery, all work must cease in the Study Area and the MCM and the Bereavement Authority of Ontario should be contacted for further direction.

2.2 Conclusions

The Stage 1 background study determined that 20 sites are within one kilometre of the Study Area and 11 sites are within the Existing Urban Employment Area and the Suggested Additional Residential Area. The Gardiner's United Church Cemetery is within the Existing Urban Employment Area. The entirety of the Special Development Area has been previously assessed and cleared of archaeological concern. Both the Existing Urban Employment Area and the Suggested Additional Residential Area require further archaeological assessment (Figures 11-13). Sites BaGo-44, BaGo-45, BaGo-46, and BaGo-47 are within the Suggested Additional Residential Area and are considered to have further CHVI requiring Stage 3 assessment.

3.0 Recommendations

The following recommendations are made:

7 Parts of the Existing Urban Employment Area and the Suggested Additional Residential Area exhibit archaeological potential. These lands require Stage 2 archaeological assessment by test pit survey (Figure 11: areas highlighted in green) or pedestrian survey (Figures 11-13: areas highlighted in orange) at five metre intervals, prior to any proposed construction activities.

8 BaGo-44, BaGo-45, BaGo-46, and BaGo-47 are within the Suggested Additional Residential Area and are considered to retain further cultural heritage value or interest. The sites must be specific to Stage 3 Site-Specific Assessment prior to any proposed impacts to the area (Figures 12-13: hatched red areas), as per the recommendations made by YNAS 2017 (P156-0254-2016) presented below:

a) For historic Euro-Canadian sites BaGo-44, BaGo-46, and BaGo-47, Stage 3 should be conducted in accordance with S & G Section 2.2, Standard 1, Subsection c, and Table 3.1: Small pre-contact or post-contact sites where it is not yet evident that the level of CHVI will result in a recommendation to proceed to Stage 4. One metre square test units

should be excavated in a five-metre grid across the site. Additional test units should be excavated amounting to 20 % of the grid unit total (e.g. if the grid total has 40 units, an additional 8 units), focusing on areas of interest within the site extent (such as distinct areas of higher concentrations within a broader artifact concentration or adjacent to high yield units).

b) For the Indigenous Pre-Contact site (BaGo-45), Stage 3 should be done to determine the density and extent of the site and define the date range of occupation. The Stage 3 should be based on S & G Table 3.1 of Section 3.2.3, excavations will follow for small sites where it is clearly evident that the level of CHVI will result in a recommendation to proceed to Stage 4. Stage 3 in this case should take the form of a ten-metre grid laid in over the extent of the Stage 2 surface finds, with one-metre-square units excavated five centimetres into subsoil or to evidence of features are encountered. An additional 40% of the total number of units should be added in areas of interest within the site extent. The fill must be screened through six-millimetre hardware mesh. Partial features should be mapped in plan view when found, their floors covered by geo-cloth and back filled until a complete Stage 4 can be conducted.

c) The proponent must erect a site buffer (fence) twenty metres out from the furthest most positive surface find as a no-go zone. A fifty-metre monitoring buffer is required to be monitored by a License archaeologist during any soil disturbance. The Licensed archaeologist may cease any soil disturbance in the monitoring buffer if archaeological resources will suffer from any development impact until such times as will allow for the excavation of the archaeological resources. These buffers must remain in place during construction or until the Stage 3 is completed at which time the twenty-metre buffer can be reduced to ten metres provided it is not a village site. The fifty-metre monitoring buffer can be removed on completion of the Stage 3.

9 Gardiner United Church Cemetery is within the Existing Urban Employment Area. All Cemetery lands should be avoided by project designs (Figure 11: area outlined in purple). A Stage 3 Cemetery investigation is not required for the well defined northern, eastern, and southern limits. The County Road 10 right-of-way lands adjacent Gardiner United Church Cemetery have potential for unmarked or shifted burials. However, a ditch has been created in these lands and there is buried utility infrastructure which preclude ASI from safely conducting mechanical topsoil removal. ASI recommends that any project impacts adjacent Gardiner United Church Cemetery be subject to Cemetery Investigation by archaeological construction monitoring (Figure 11: hatched yellow areas).

a) A licensed archaeologist should be present on site for the duration of any impacts to monitor for the presence of unmarked burials and shall have the authority to direct construction to subsoil to identify any grave shafts that may be present (as per S & G Section 3.3.3 Standard 2) until it is confirmed that no burials are located within the Study Area, or the area is observed to be extensively and intensively disturbed. If any grave shafts are identified that are associated with this cemetery, all work must cease in the Study Area and the MCM and the Bereavement Authority of Ontario should be contacted for further direction.

10 The road right-of-ways in the Existing Urban Employment Area and the Suggested Additional Residential Area exhibit low archaeological potential and have likely been subjected to deep soil disturbance events due to typical road construction. However since no property inspection was conducted, these lands beyond the paved road bed must be subject to visual inspection to confirm the extent of disturbance during future Stage 2 survey.

11 The entirety of the Special Development Area does not retain archaeological potential due to being previously assessed and being cleared of further archaeological concern. These lands do not require further archaeological assessment.

12 During any further archaeological assessments, meaningful engagement with Indigenous communities should be conducted, as outlined in Section 3.5 of the S & G and *Engaging Aboriginal Communities in Archaeology Technical Bulletin*.

13 Should the proposed work extend beyond the current Study Area, further Stage 1 archaeological assessment should be conducted to determine the archaeological potential of the surrounding lands.

NOTWITHSTANDING the results and recommendations presented in this study, ASI notes that no archaeological assessment, no matter how thorough or carefully completed, can necessarily predict, account for, or identify every form of isolated or deeply buried archaeological deposit. In the event that archaeological remains are found during subsequent construction activities, the consultant archaeologist, approval authority, and the Cultural Programs Unit of the MCM should be immediately notified.

The above recommendations are subject to MCM approval, and it is an offence to alter any archaeological site without MCM concurrence. No grading or other activities that may result in the destruction or disturbance of any archaeological sites are permitted until notice of MCM approval has been received.

4.0 Legislation Compliance Advice

ASI advises compliance with the following legislation:

- This report is submitted to the MCM as a condition of licensing in accordance with Part VI of the Ontario Heritage Act, RSO 2005, c 0.18. The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological field work and report recommendations ensure the conservation, preservation and protection of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the MCM, a letter will be issued by the Ministry stating that there are no further concerns with regards to alterations to archaeological sites by the proposed development.

- It is an offence under Sections 48 and 69 of the Ontario Heritage Act for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed archaeological field work on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the Ontario Public Register of Archaeology Reports referred to in Section 65.1 of the Ontario Heritage Act.

- Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48 (1) of the Ontario Heritage Act. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with sec. 48 (1) of the Ontario Heritage Act.

- The Funeral, Burial and Cremation Services Act, 2002, S.O. 2002, c.33, requires that any person discovering or having knowledge of a burial site shall immediately notify the police or coroner. It is recommended that the Registrar of Cemeteries at the Ministry of Consumer Services is also immediately notified.

- Archaeological sites recommended for further archaeological field work or protection remain subject to Section 48(1) of the Ontario Heritage Act and may not be altered, nor may artifacts be removed from them, except by a person holding an archaeological license.

5.0 Bibliography and Sources

AMICK Consultants Ltd. (2019a). Stage 1-2 Archaeological Property Assessment Millbrook North Part of Lots 11 and 12, Concession 6 and Part of Lot 12 Concession 5 (Geographic Township of Cavan, County of Durham), Township of Cavan-Millbrook-North Monaghan, County of Peterborough.

AMICK Consultants Ltd. (2019b). Stage 3 Site-Specific Assessment Patrick MaGuire's Castle Site (BaGo-49) Part of Lots 11 and 12, Concession 6, Part of Lot

12 Concession 5(Geographic Township of Cavan, County of Durham), Township of Cavan-Millbrook-North Monaghan, County of Peterborough.

Andreae, C. (1997). Lines of Country: An Atlas of Railway and Waterway History in Canada. Boston Mills Press.

Archaeological Services Inc. (2006). Historical Overview and Assessment of Archaeological Potential Don River Watershed, City of Toronto. Report on file with the Ontario Ministry of Tourism, Culture and Sport.

Belden, H. (1878). Illustrated Historical Atlas of the Counties of Northumberland and Durham, Ont. [Map].

Birch, J., Manning, S. W., Sanft, S., & Conger, M. A. (2021). Refined Radiocarbon Chronologies for Northern Iroquoian Site Sequences: Implications for Coalescence, Conflict, and the Reception of European Goods. American Antiquity, 86(1), 61–89.

Birch, J., & Williamson, R. F. (2013). The Mantle Site: An Archaeological History of an Ancestral Wendat Community. Rowman & Littlefield Publishers, Inc.

Brown, J. (1995). On Mortuary Analysis – with Special Reference to the Saxe-Binford Research Program. In L. A. Beck (Ed.), Regional Approaches to Mortuary Analysis (pp. 3–23). Plenum Press.

Chapman, L. J., & Putnam, F. (1984). The Physiography of Southern Ontario (3rd ed., Vol. 2). Ontario Ministry of Natural Resources.

Crown-Indigenous Relations and Northern Affairs. (2016). Rice Lake Treaty, No. 20. Treaty Texts – Upper Canada Land Surrenders. https://www.rcaanc-cirnac.gc.ca/eng/1370372152585/1370372222012#ucls18

Department of Energy, Mines and Resources. (1985). Rice Lake Sheet 31D/1 [Map].

Department of National Defence. (1932). Rice Lake Sheet 31D/1 [Map].

Dodd, C. F., Poulton, D. R., Lennox, P. A., Smith, D. G., & Warrick, G. A. (1990). The Middle Ontario Iroquoian Stage. In C. J. Ellis & N. Ferris (Eds.), The Archaeology of Southern Ontario to A.D. 1650 (pp. 321–360). Ontario Archaeological Society Inc.

Edwards, T. W. D., & Fritz, P. (1988). Stable-Isotope Paleoclimate Records from Southern Ontario, Canada: Comparison of Results from Marl and Wood. Canadian Journal of Earth Sciences, 25, 1397–1406.

Ellis, C. J., & Deller, D. B. (1990). Paleo-Indians. In C. J. Ellis & N. Ferris (Eds.), The Archaeology of Southern Ontario to A.D. 1650 (pp. 37–64). Ontario Archaeological Society Inc.

Ellis, C. J., Kenyon, I. T., & Spence, M. W. (1990). The Archaic. In C. J. Ellis & N. Ferris (Eds.), The Archaeology of Southern Ontario to A.D. 1650 (pp. 65–124). Ontario Archaeological Society Inc.

Ellis, C. J., Timmins, P. A., & Martelle, H. (2009). At the Crossroads and Periphery: The Archaic Archaeological Record of Southern Ontario. In T. D. Emerson, D. L. McElrath, & A. C. Fortier (Eds.), Archaic Societies: Diversity and Complexity across the Midcontinent. (pp. 787–837). State University of New York Press.

Ferris, N. (2013). Place, Space, and Dwelling in the Late Woodland. In M. K. Munson & S. M. Jamieson (Eds.), Before Ontario: The Archaeology of a Province (pp. 99–111). McGill-Queen's University Press. http://www.jstor.org/stable/j.ctt32b7n5.15

Fisher Archaeological Consulting. (2010). Project D-00596 – Former Millbrook Correctional Centre Peterborough County Archaeological Stage 2: Assessment.

Fisher Archaeological Consulting. (2014). Project D-00596 – Former Millbrook Correctional Centre Part of Lot 10, Concession 5, (Geographic Township of Cavan), Municipality of Cavan Monaghan Millbrook, Peterborough County Archaeological Stage 3: Site-specific Assessment. P042-251-2011.

Google Maps. (2018). Google Maps [Map].

Hunting Survey Corporation Limited. (1954). Digital Aerial Photographs [Map]. https://mdl.library.utoronto.ca/collections/air-photos/1954-air-photos-southern-ontario/index

Irvin Heritage Inc. (2020). Stage 1 & 2 Archaeological Assessment & Stage 3 Archaeological Assessment of the Tenant (BaGo-55), Tenant Knoll (BaGo-56), Tenant Pond (BaGo-57) and McNish (BbGo-34) Sites. [P379-0300-2020, P379-0301-2020, P379-0327-2020, P379-0325-2020, P379-0311-2020, P379-0340-2020].

Irving Heritage Inc. (2020). Stage 4 Archaeological Excavation of the MaGuire's Castle Site BaGo-49 Part of Lot 12, Concession 6 Township of Cavan-Millbrook-North Monaghan County of Peterborough Historic Durham County [P379-0259-2019].

Irving Heritage Inc. (2022). Stage 4 Archaeological Excavation of the McNish Site BbGo-34 Part of Lot 12, Concession 6 Township of Cavan-Millbrook-North Monaghan County of Peterborough Historic Durham County [P379-0408-2021].

Karrow, P. F., & Warner, B. G. (1990). The Geological and Biological Environment for Human Occupation in Southern Ontario. In The Archaeology of Ontario to A.D. 1650 (pp. 5–36). London Chapter, Ontario Archaeological Society.

Mika, N., & Mika, H. (1977). Places In Ontario: Their Name Origins and History, Part I, A-E: Vol. I (https://archive.org/details/placesinontariot0001mika). Mika Publishing Company; Internet Archive.

Mika, N., & Mika, H. (1981). Places In Ontario: Their Name Origins and History, Part II, F-M (https://archive.org/details/placesinontariot0002mika; Vol. 2). Mika Publishing Company; Internet Archive.

Ministry of Citizenship and Multiculturalism. (1990). Ontario Heritage Act, R.S.O. c. O.18.

Ministry of Citizenship and Multiculturalism. (2023). Ontario's Past Portal. PastPortal. https://www.pastport.mtc.gov.on.ca

Environmental Assessment Act, R.S.O. c. E.18, (1990).

MTC, (Ministry of Tourism and Culture). (2011). Standards and Guidelines for Consultant Archaeologists. Archaeology Programs Branch, Ontario Ministry of Tourism and Culture.

Municipal Engineers Association. (2023). Municipal Class Environmental Assessment.

Municipal Restructuring Activity Summary Table. (2018). http://www.mah.gov.on.ca/AssetFactory.aspx?did=19769

Ontario Geological Survey. (2010). Surficial geology of Southern Ontario. Miscellaneous Release—Data 128 – Revised. [Map]. http://www.geologyontario.mndm.gov.on.ca/mndmaccess/mndm_dir.asp?type=pub&id=MRD128-REV

Otonabee Conservation. (2013). Otonabee Region Watershed Report Card 2013. https://issuu.com/forsefield/docs/otonabee?e=1403707/1803012

Otonabee Conservation. (2018). Otonabee Region Watershed Report Card 2018. https://www.otonabeeconservation.com/wp-content/uploads/2018/03/2018-Watershed-Report-Card-FOR-WEB.pdf

Rogers, E. S. (1962). The Round Lake Ojibwa. Royal Ontario Museum.

Spence, M. W., Pihl, R. H., & Murphy, C. (1990). Cultural Complexes of the Early and Middle Woodland Periods. In C. J. Ellis & N. Ferris (Eds.), The Archaeology of Southern Ontario to A.D. 1650. Ontario Archaeological Society Inc.

Toronto Railway Historical Association. (2020). Midland Railway of Canada. https://www.trha.ca/trha/history/railways/midland-railway-of-canada/

Tremaine, G. C. (1861). Tremaine's Map of the County of Durham, Upper Canada [Map]. George C. Tremaine.

Williams Treaties First Nations. (2017). About Williams Treaties First Nations. http://www.williamstreatiesfirstnations.ca/about/

Williamson, R. F. (1990). The Early Iroquoian Period of Southern Ontario. In C. J. Ellis & N. Ferris (Eds.), The Archaeology of Southern Ontario to A.D. 1650 (pp. 291–320). Ontario Archaeological Society Inc.

York North Archaeological Services Inc. (2017). A Stage 1 -2 Archaeological Assessment of the Proposed Bromont Homes Subdivision, Located in Part Lot 11e, Concession 5, Cavan Township, (Former County of Durham), Now in the County of Peterborough, Ontario.

6.0 Images



Image 1: View of Ferguson grave marker (Google Maps, 2018).

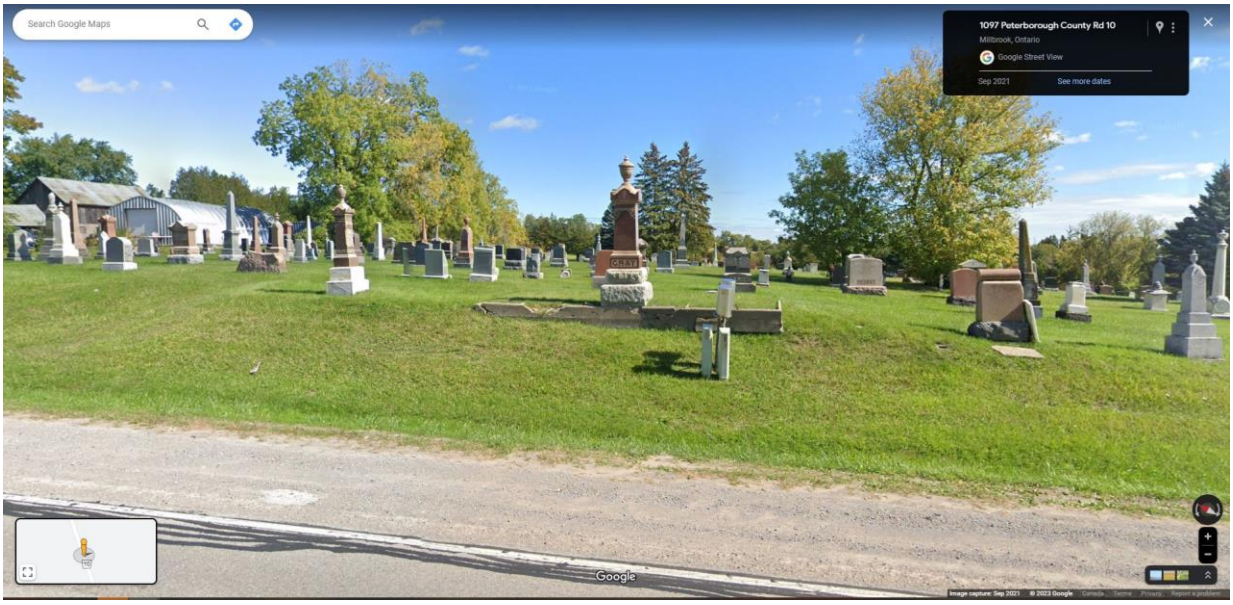


Image 2: View of Gray grave marker and cement support with utility boxes in ditched right-of-way (Google Maps, 2018).

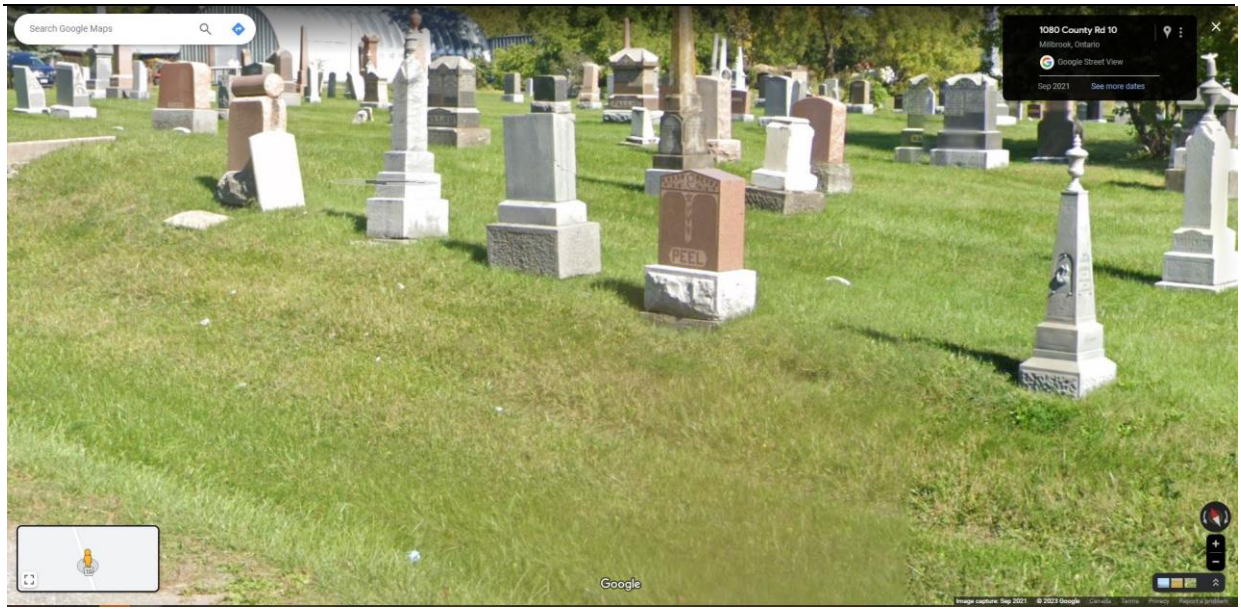


Image 3: View of Peel grave marker (Google Maps, 2018).

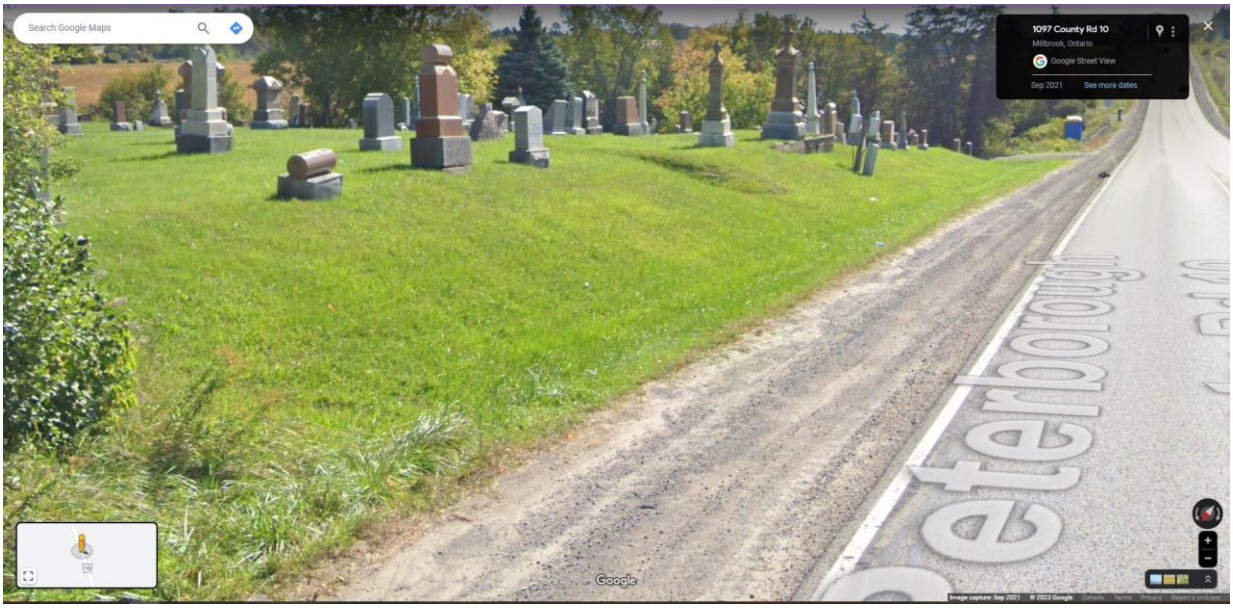


Image 4: View of grave makers along western boundary along ditched right-of-way (Google Maps, 2018).

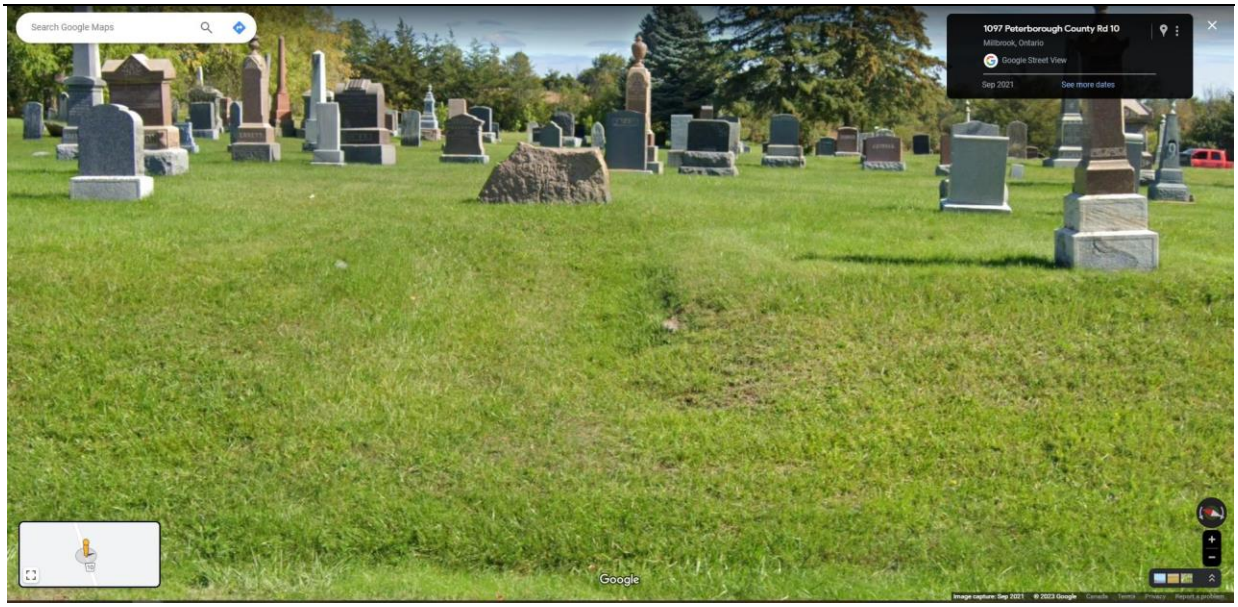


Image 5: View of grave markers and Gardiner's Cemetery decorative marker around previous gate location (Google Maps, 2018).

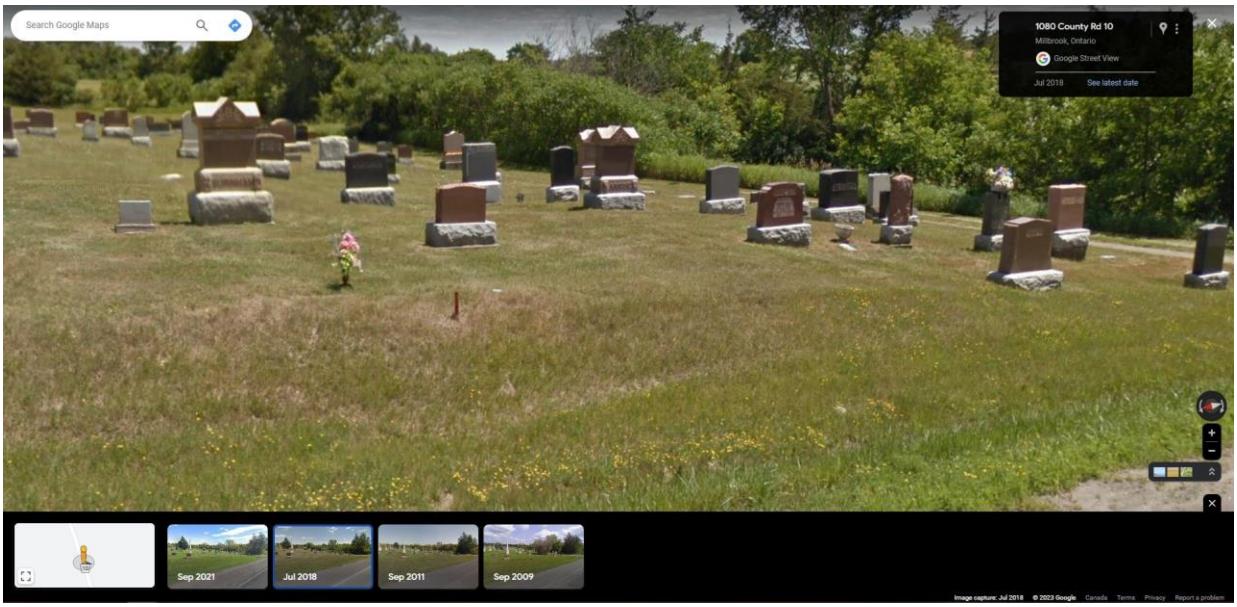


Image 6: View of Burnham grave marker and red stake marker for line between old and new cemetery grounds (Google Maps, 2018).



Image 7: View of Gardiner's Cemetery northern limit (Google Maps, 2018).

7.0 Maps

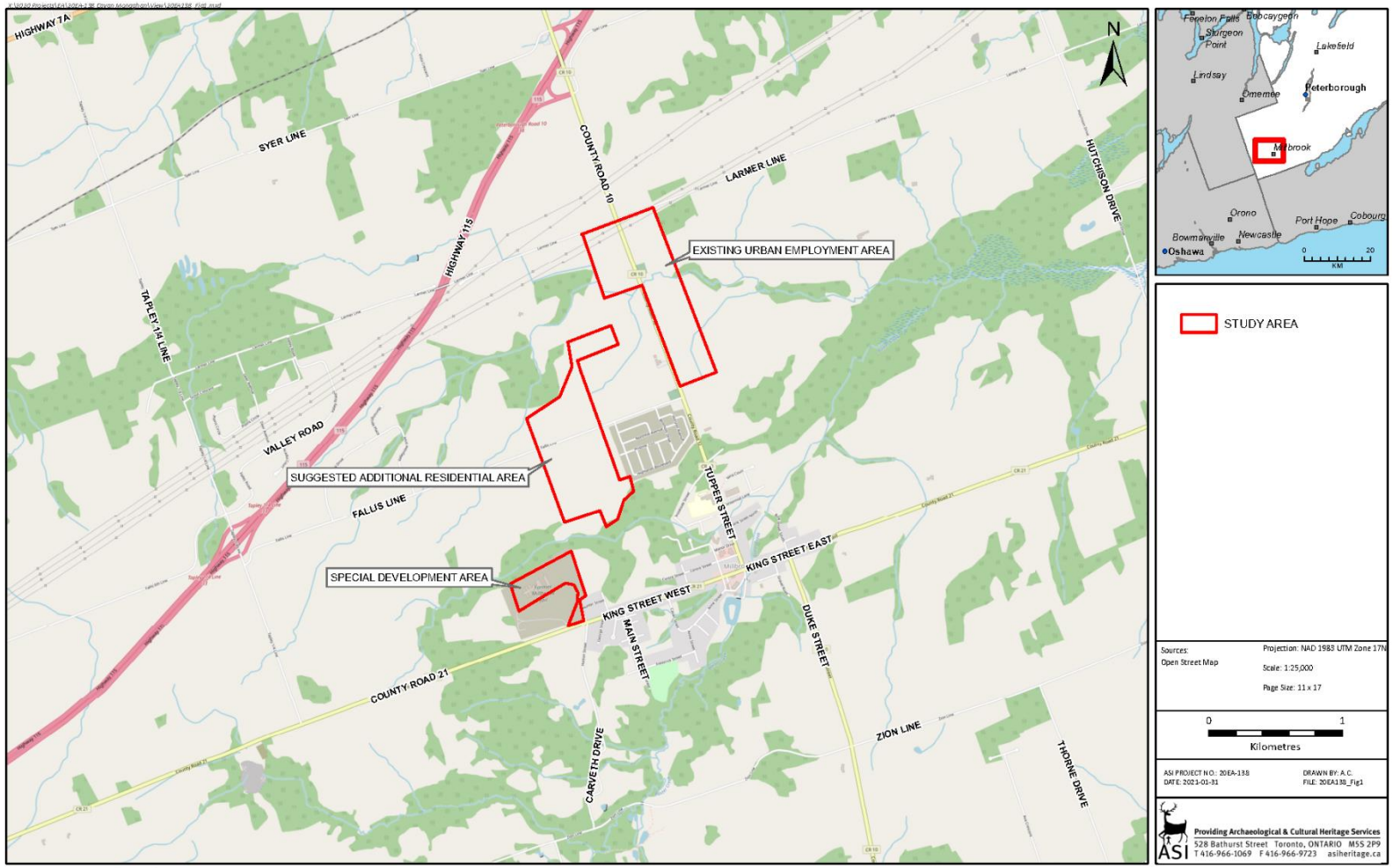


Figure 1: Study Area Location

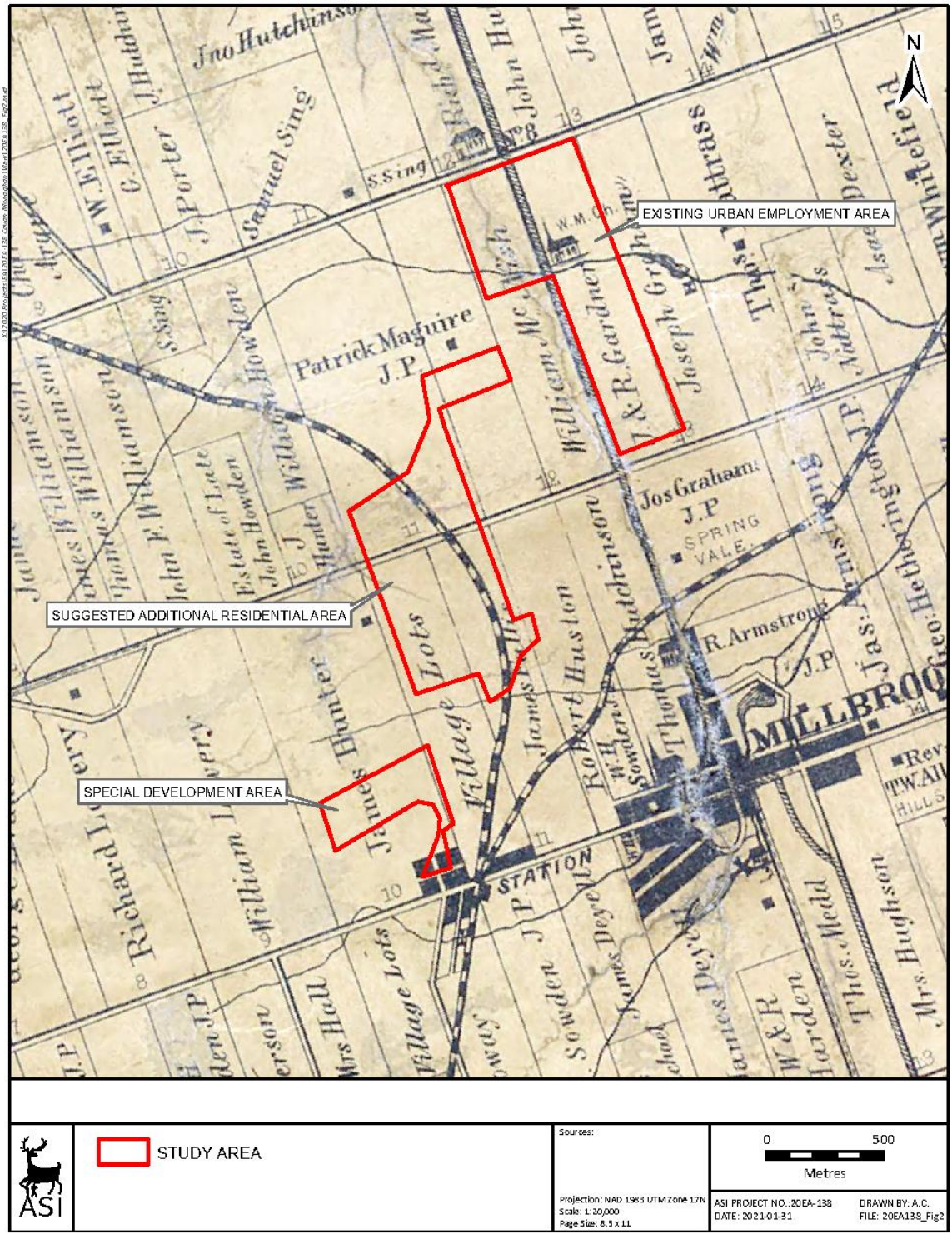


Figure 2: Study Area (Approximate Location) Overlaid on the 1861 Tremaine's Map of Durham County.

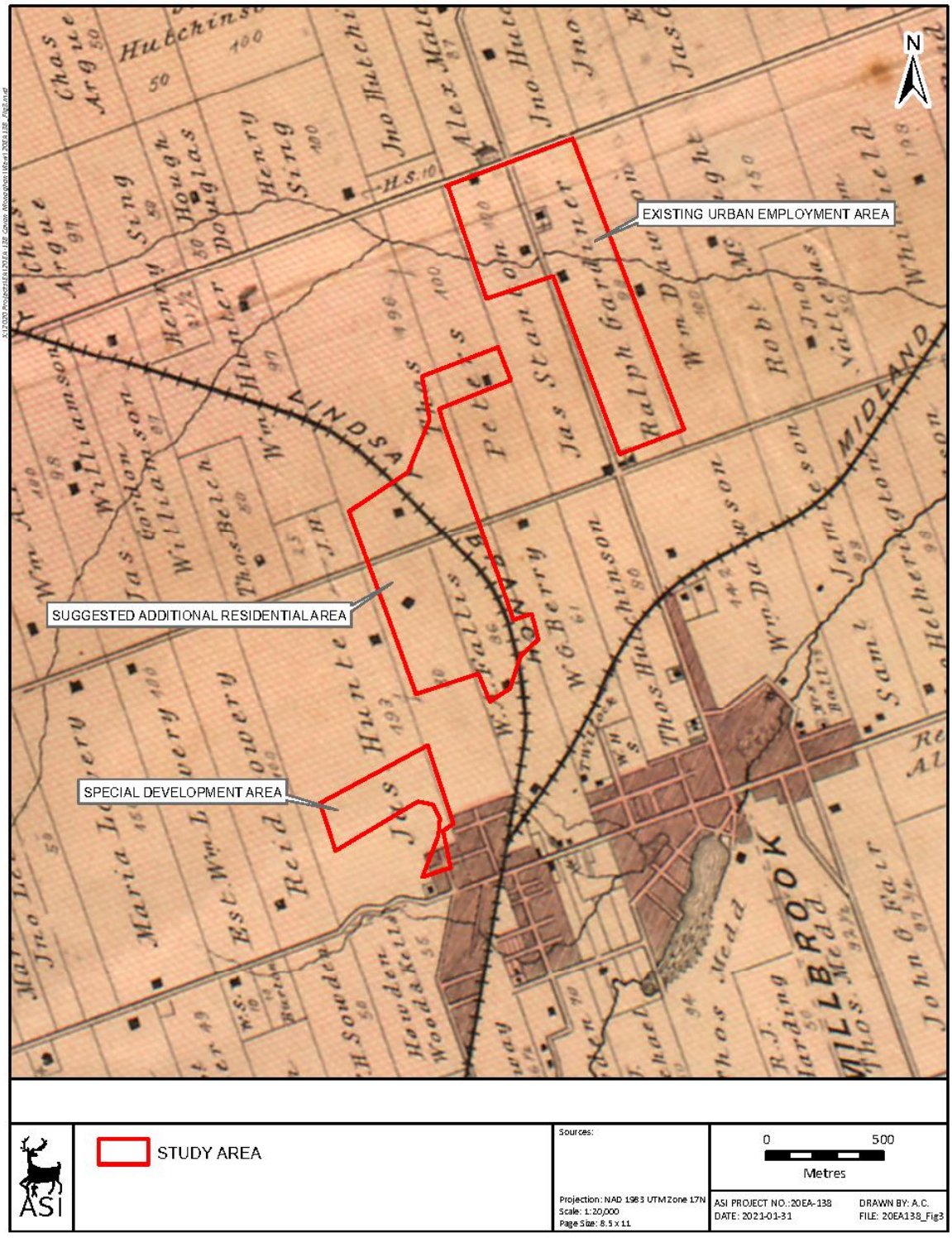


Figure 3: Study Area (Approximate Location) Overlaid on the 1878 Illustrated Historical Atlas of Durham County.

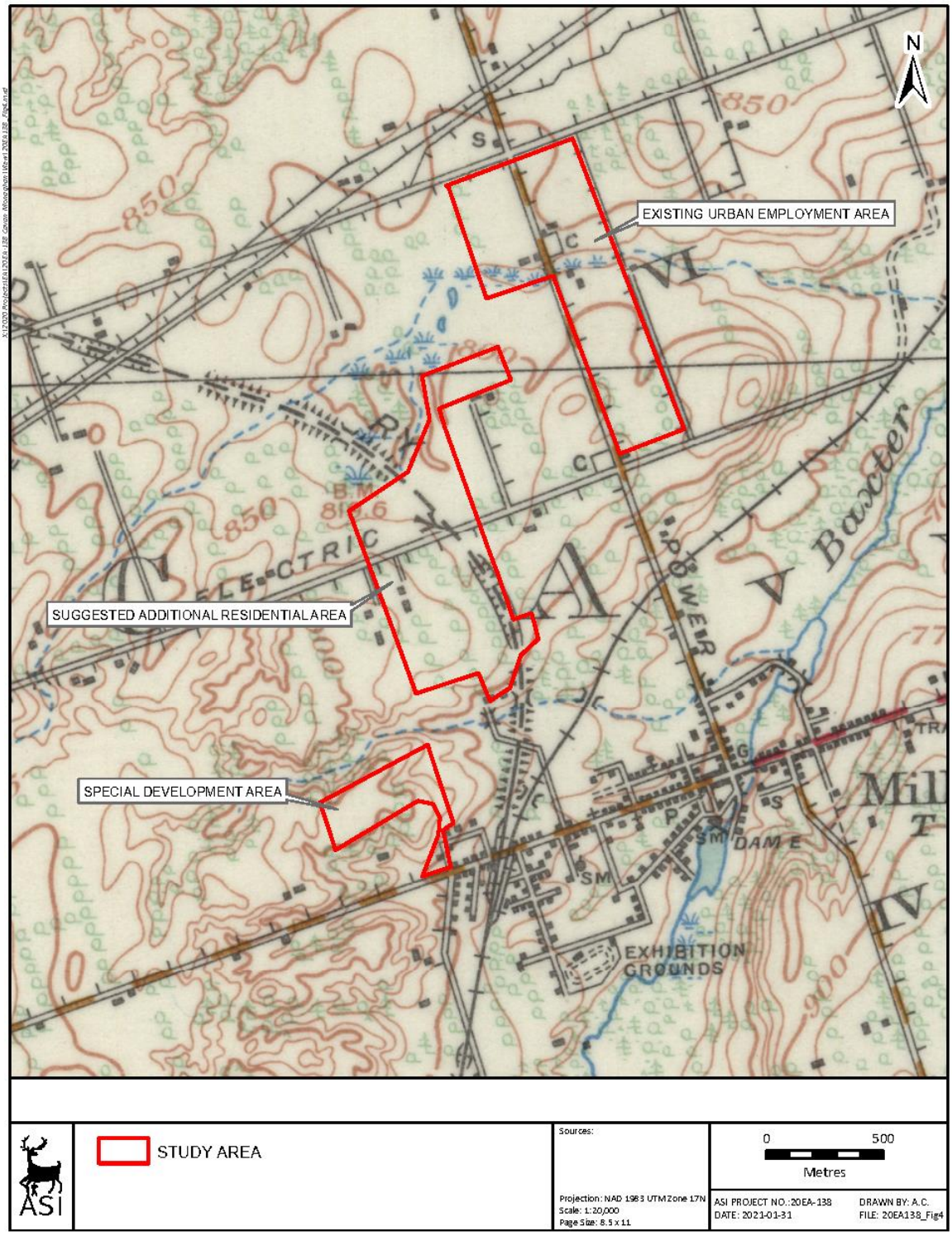


Figure 4: Study Area (Approximate Location) Overlaid on the 1932 DMD Topographic Mapping Rice Lake Sheet.

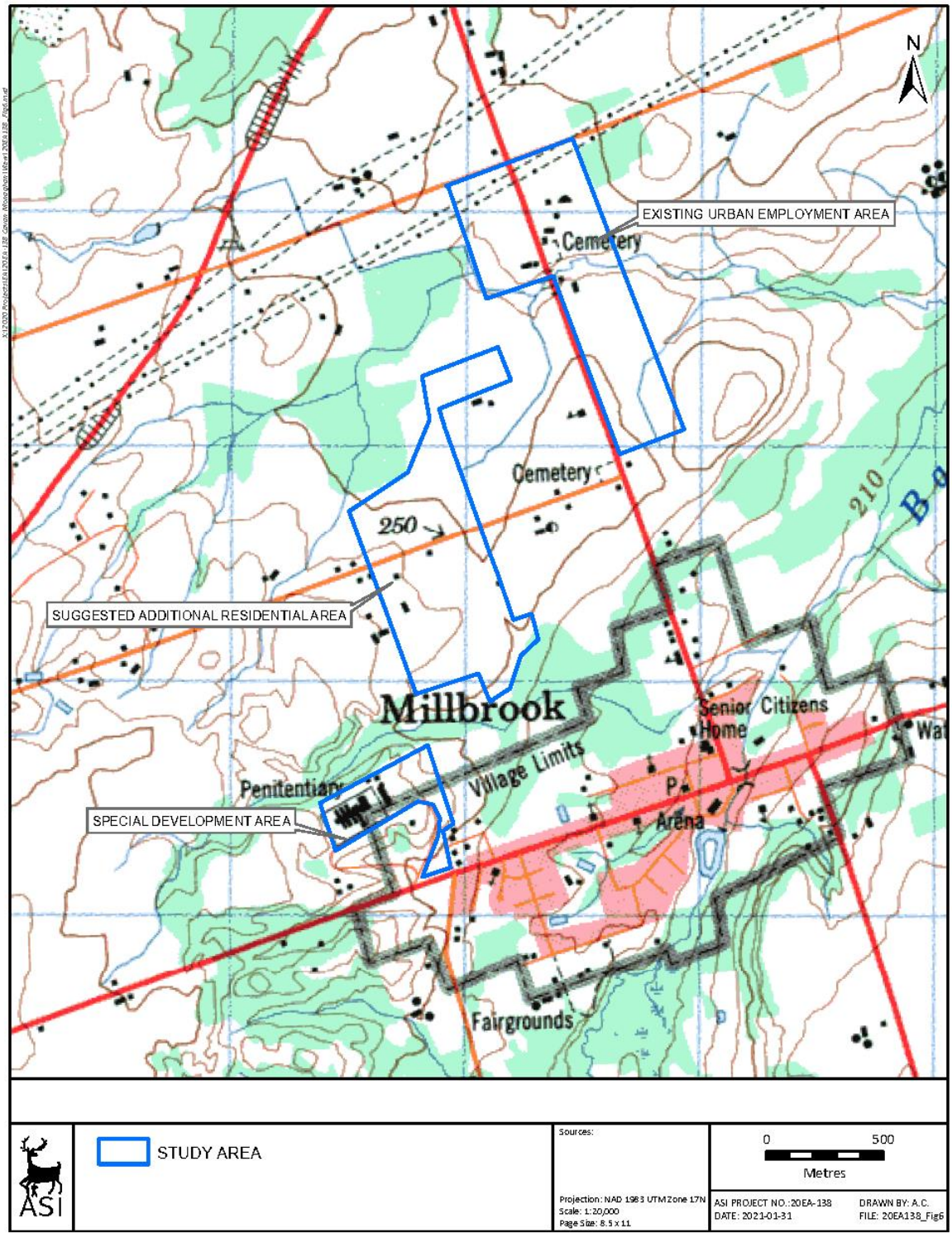


Figure 5: Study Area (Approximate Location) Overlaid on the 1985 NTS Rice Lake Sheet.

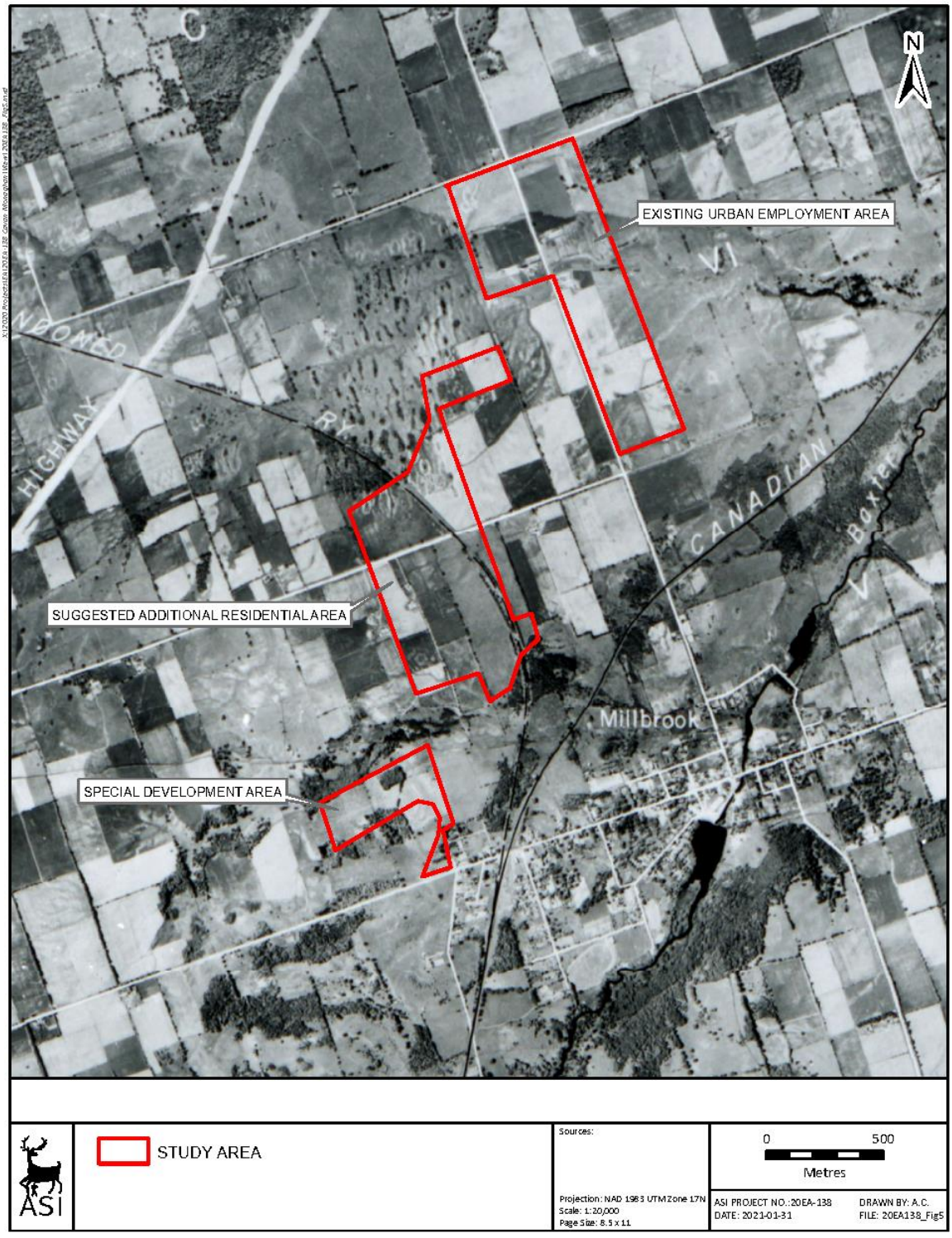


Figure 6: Study Area (Approximate Location) Overlaid on the 1954 Aerial Photography.

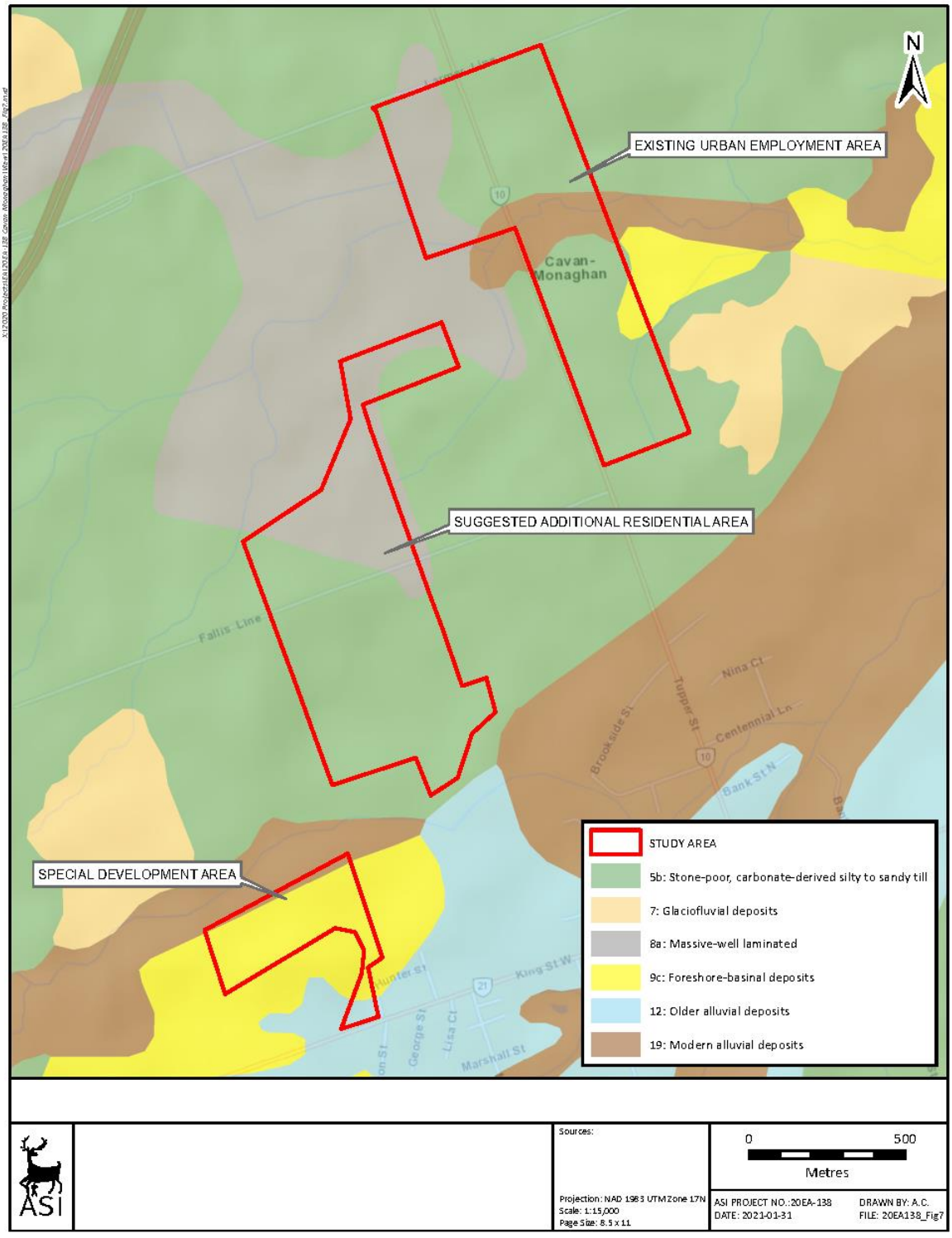


Figure 7: Study Area - Surficial Geology.

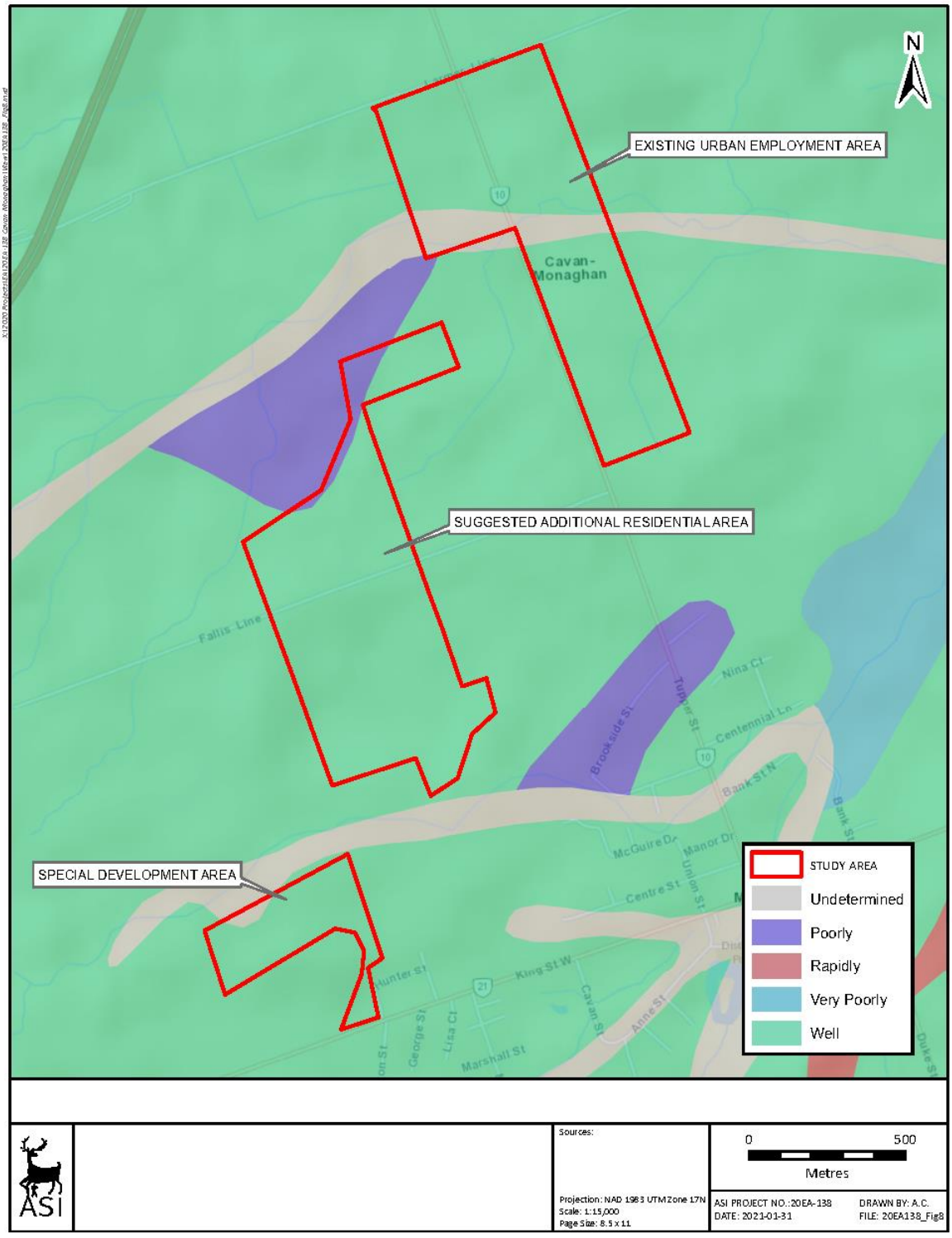


Figure 8: Study Area - Soil Drainage.



Figure 9: Gardiner's Cemetery (2018 Google Imagery).

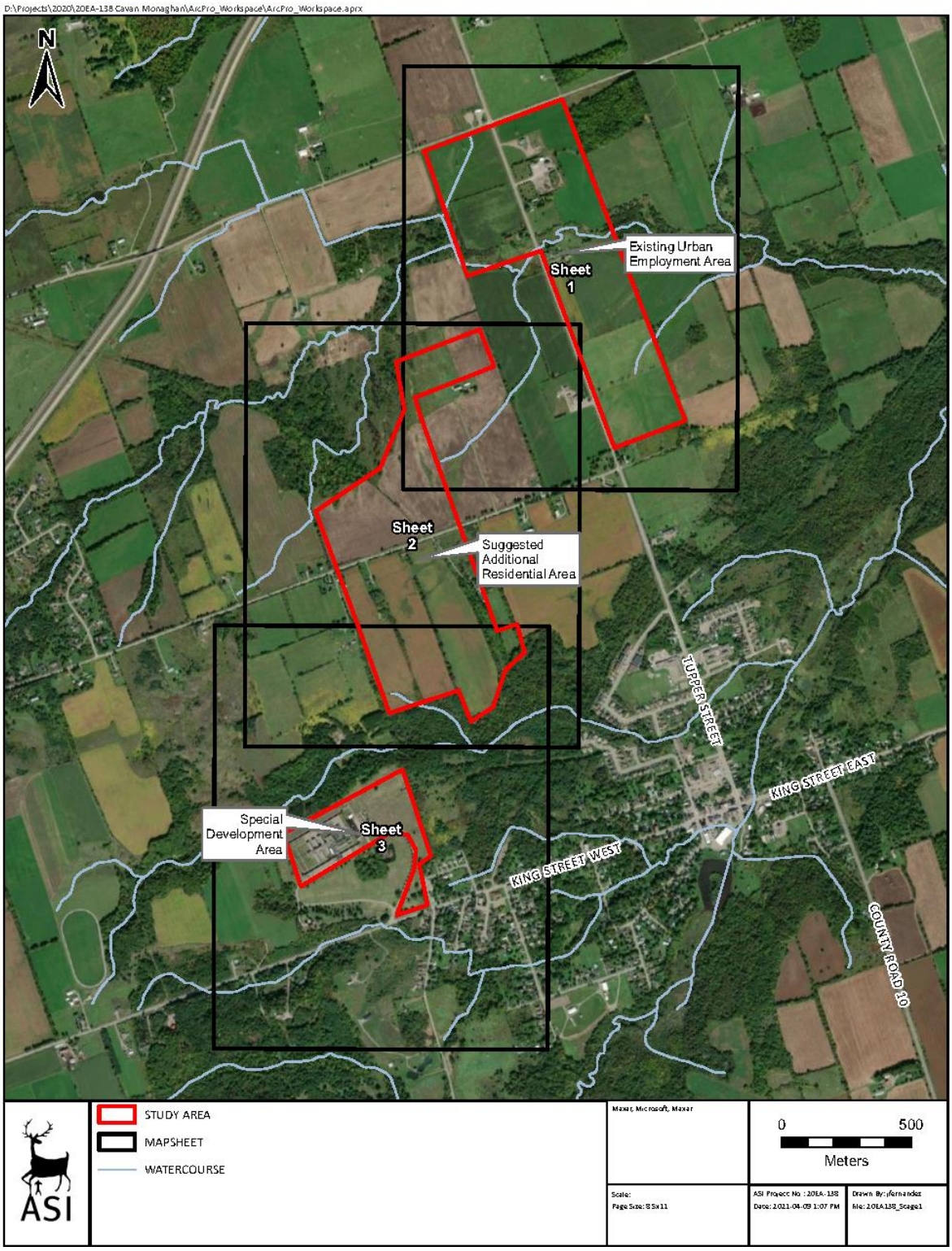


Figure 10: Study Area – Results of Stage 1 (Key Map).



Figure 11: Existing Urban Employment Area – Results of Stage 1 (Sheet 1).

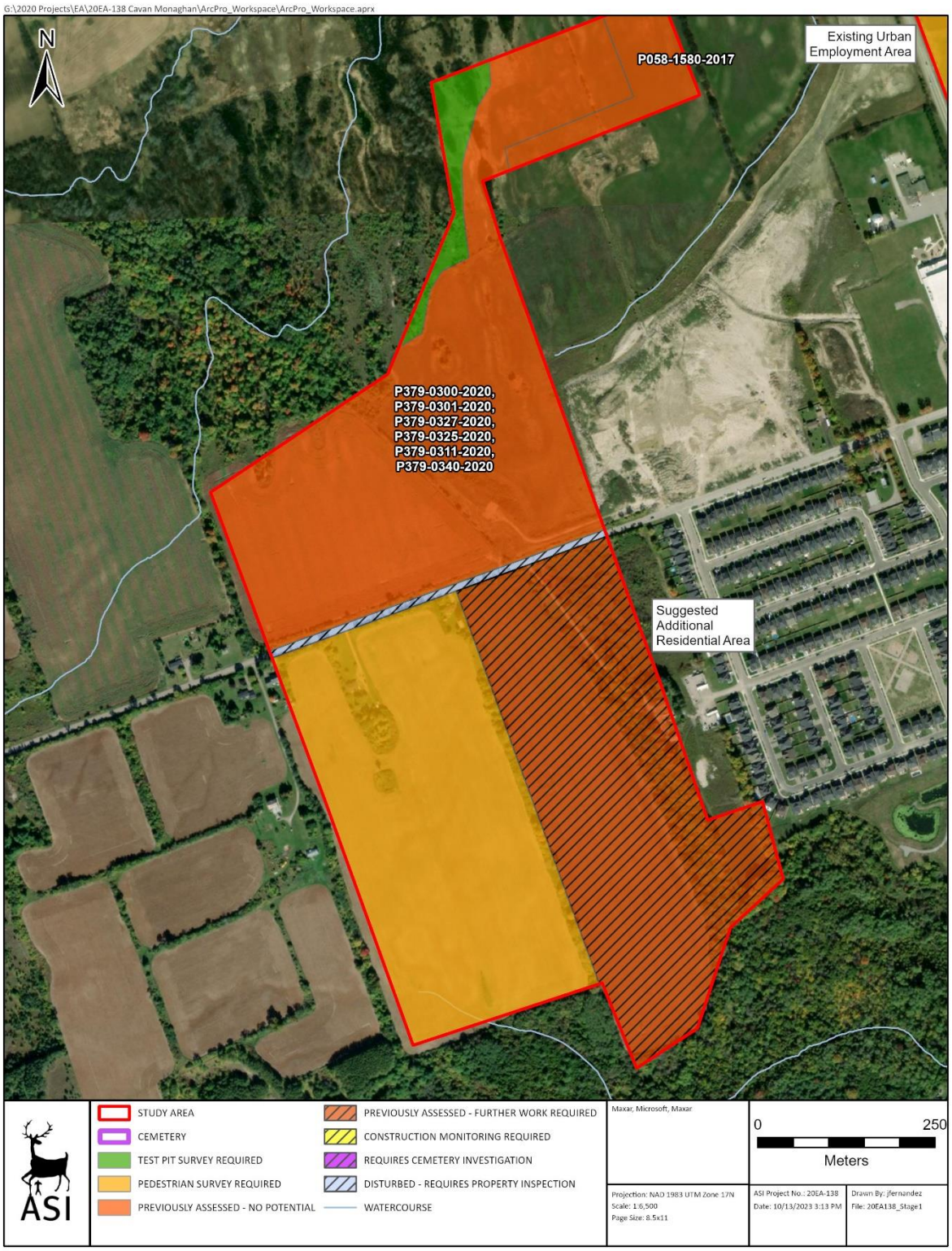


Figure 12: Suggested Additional Residential Area – Results of Stage 1 (Sheet 2).

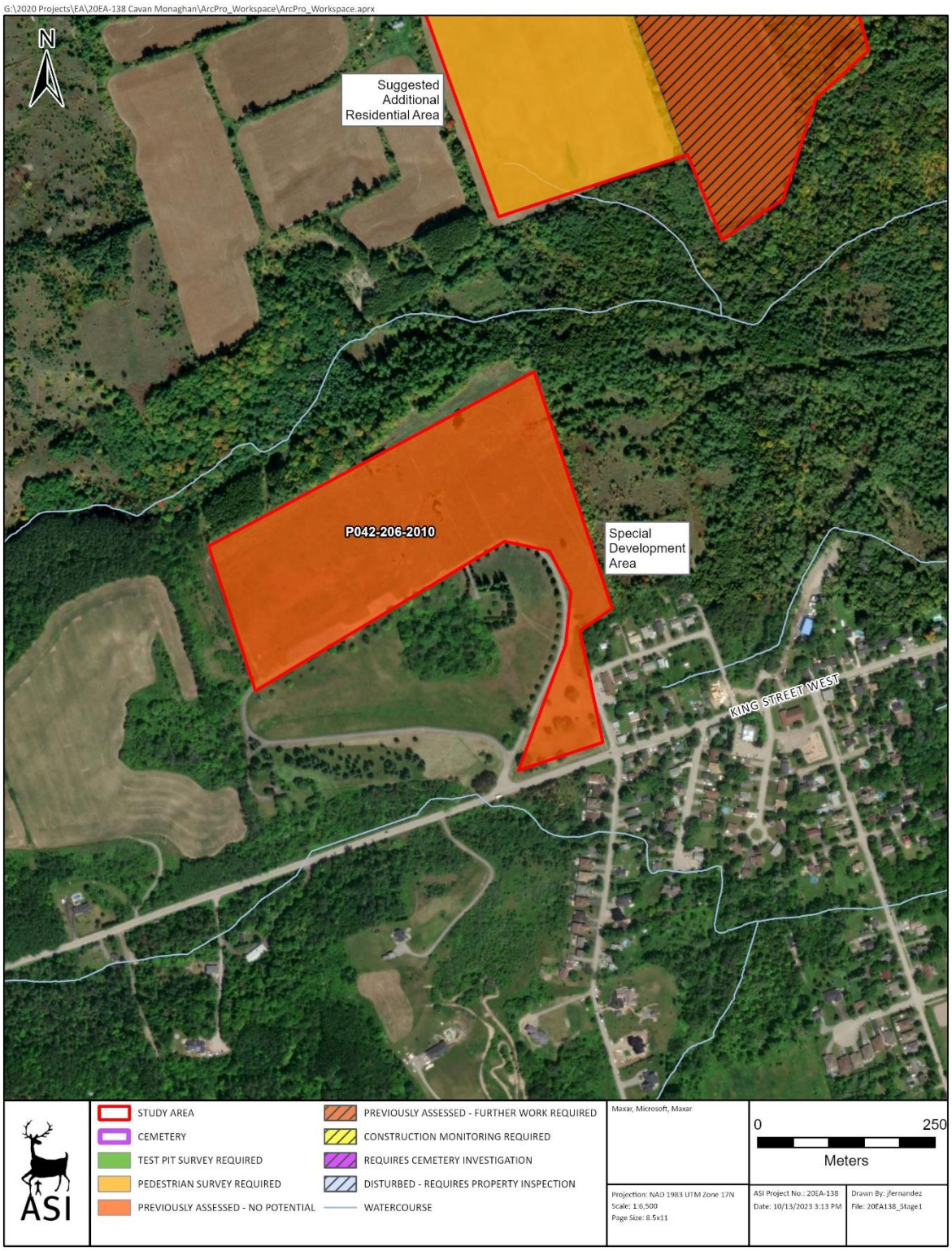


Figure 13: Special Development Area – Results of Stage 1 (Sheet 3).

8.0 Appendix A: Cemetery Plans



Figure 14: Gardiner's Cemetery Burial Plots and Boundaries.

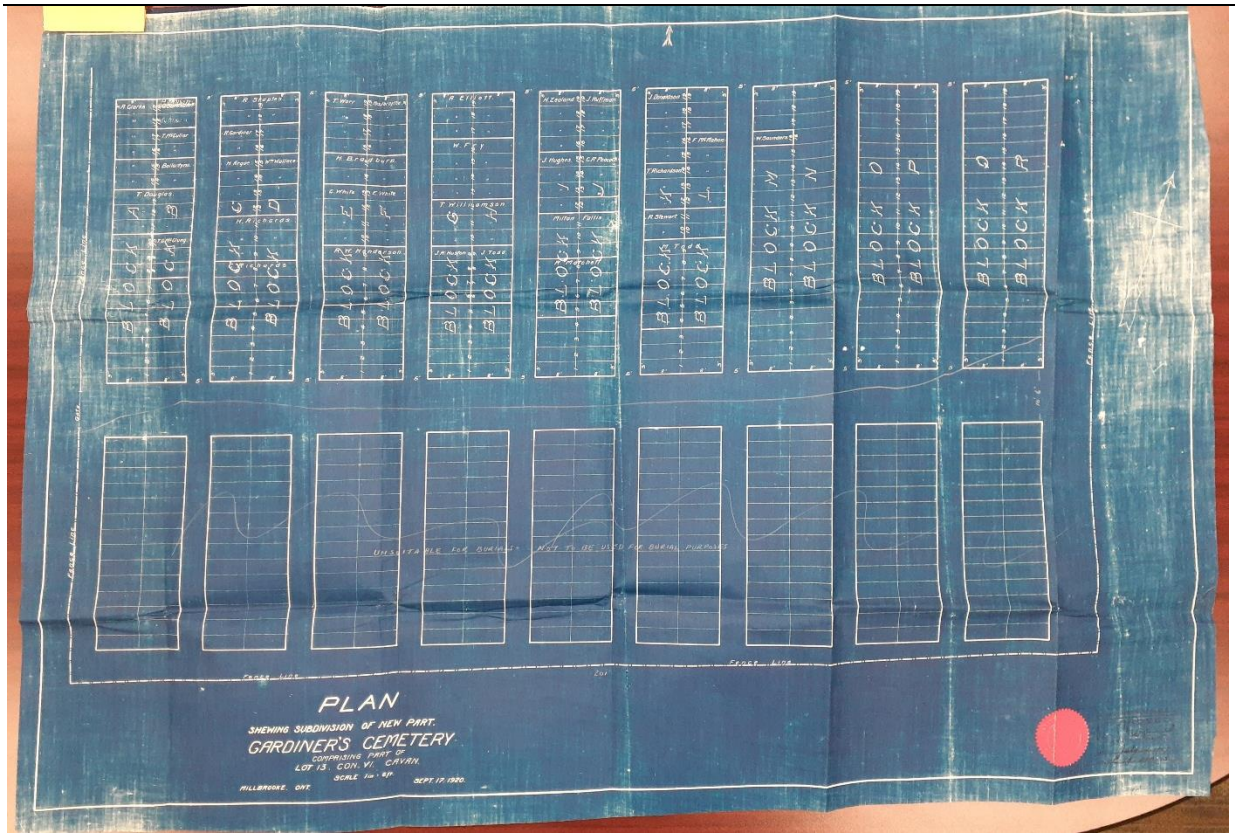


Figure 15: Gardiner's Cemetery Burial Plots and Boundaries.

Cultural Heritage Report: Desktop Collection Results

Cavan Monaghan Water and Wastewater Master Servicing Study

Township of Cavan Monaghan, Ontario

Final Report

Prepared for:

R. V. Anderson Associates Ltd.
2001 Sheppard Avenue East, Suite 300
Toronto, ON M2J 4Z8

ASI File: 22CH-111

January 2021 (Revised July and October 2023)



Executive Summary

Archaeological Services Inc. was contracted by R.V. Anderson Associates Ltd., on behalf of the Township of Cavan Monaghan, to conduct a Cultural Heritage Report: Desktop Collection Results (Cultural Heritage Report) as part of the Cavan Monaghan Water and Wastewater Master Servicing Study. The Cavan Monaghan Water and Wastewater Master Servicing Study involves the evaluation of water and wastewater servicing infrastructure needs to accommodate additional growth in the Millbrook Urban Settlement Area. The project study area focuses on two areas within the Millbrook boundary, that are not currently developed, as well as a third area including 50 hectares of land that are outside the Millbrook boundary that are of interest to the Township.

The results of background historical research and a review of secondary source material, including historical mapping, indicate a study area with a rural land use history dating back to the early nineteenth century. A review of federal, provincial, and municipal registers, inventories, and databases revealed that there are eight potential cultural heritage landscapes within the Cavan Monaghan Water and Wastewater Master Servicing Study project study area.

The results presented in this desktop report are of the previously identified built heritage resources and cultural heritage landscapes within the study area. As the scope of work for this assessment does not include a field review, there is the potential for additional built heritage resources and cultural heritage landscapes to be located within the study area. Given the high-level nature of the Master Servicing Study, specific locations of the future infrastructure had not been determined at the time of report finalization (July 2023). When the future infrastructure locations are being considered through subsequent studies, they will be assessed against information contained in this report and additional cultural heritage reporting will be undertaken as required.

Report Accessibility Features

This report has been formatted to meet the Information and Communications Standards under the *Accessibility for Ontarians with Disabilities Act*, 2005 (A.O.D.A.). Features of this report which enhance accessibility include: headings, font size and colour, alternative text provided for images, and the use of periods within acronyms. Given this is a technical report, there may be instances where additional accommodation is required in order for readers to access the report's information. If additional accommodation is required, please contact Annie Veilleux, Manager of the Cultural Heritage Division at Archaeological Services Inc., by email at aveilleux@asiheritage.ca or by phone 416-966-1069 ext. 255.

Project Personnel

- **Senior Project Manager**: Annie Veilleux, M. A., CAHP, Senior Cultural Heritage Specialist, Manager - Cultural Heritage Division
- **Project Coordinator:** Katrina Thatch, Hon. B. A., Archaeologist, Project Coordinator - Environmental Assessment Division
- **Project Manager**: Johanna Kelly, M. Sc., Cultural Heritage Analyst, Project Manager - Cultural Heritage Division
- **Report Production**: Kirstyn Allam, B. A. (Hon), Advanced Diploma in Applied Museum Studies, Cultural Heritage Technician, Technical Writer and Researcher - Cultural Heritage Division
- **Graphics Production**: Andrew Clish, B. E. S., Senior Archaeologist - Planning Assessment Division; Peter Bikoulis, Archaeologist, GIS Technician – Operations Division
- **Report Reviewer(s)**: Johanna Kelly and Annie Veilleux

Qualified Persons Involved in the Project

Annie Veilleux, M. A., C.A.H.P.
Senior Cultural Heritage Specialist, Manager - Cultural Heritage Division

The Senior Project Manager for this Cultural Heritage Report is **Annie Veilleux** (M.A., C.A.H.P.), who is a Senior Cultural Heritage Specialist and Manager of the Cultural Heritage Division with ASI. She was responsible for: overall project scoping and approach; development and confirmation of technical findings and study recommendations; application of relevant standards, guidelines and regulations; and implementation of quality control procedures. Annie is academically trained in the fields of cultural landscape theory, history, archaeology, and collections management and has over 15 years of experience in the field of cultural heritage resource management. This work has focused on the identification and evaluation of cultural heritage resources, both above and below ground. Annie has managed and conducted numerous built heritage and cultural heritage landscape assessments, heritage recordings and evaluations, and heritage impact assessments as required for Environmental Assessments and Planning projects throughout the Province of Ontario. Annie has extensive experience leading and conducting research for large-scale heritage planning studies, heritage interpretation programs, and projects requiring comprehensive public and Indigenous engagement programs. She is fully bilingual in English and French and has served as a French language liaison on behalf of ASI. Annie is a member of the Ontario Archaeological Society, the National Trust for Canada, the Ontario Association for Impact Assessment, and the Association for Critical Heritage Studies. She is also a professional member in good standing of the Canadian Association of Heritage Professionals.

Johanna Kelly, M.S.c.,
Cultural Heritage Analyst, Project Manager - Cultural Heritage Division

The Project Manager for this Cultural Heritage Report is **Johanna Kelly** (M.S.c.), who is a Cultural Heritage Analyst and Project Manager within the Cultural Heritage Division with ASI. She was responsible for the day-to-day management

activities, including scoping of research activities and drafting of study findings and recommendations. With over ten years of experience in the field, Johanna has focused on the identification and evaluation of cultural heritage resources both above and below ground. With a background in archaeology, her current focus is the assessment, evaluation, and protection of above ground cultural heritage resources. Johanna has been involved in numerous large scale and high profile projects in various capacities, including built heritage and cultural heritage landscape assessments under the *Ontario Environmental Assessment Act* for Class Environmental Assessments and Individual Environmental Assessments, and as required for various planning studies throughout the Province of Ontario.

Kirstyn Allam, B.A. (Hon), Advanced Dipl. in Applied Museum Studies
Cultural Heritage Technician, Technical Writer and Researcher - Cultural Heritage Division

The Cultural Heritage Technician for this project is **Kirstyn Allam** (B.A. (Hon.), Advanced Diploma in Applied Museum Studies), who is a Cultural Heritage Technician and Technical Writer and Researcher within the Cultural Heritage Division with ASI. She was responsible for preparing and contributing to research and technical reporting. Kirstyn's education and experience in cultural heritage, historical research, archaeology, and collections management has provided her with a deep knowledge and strong understanding of the issues facing the cultural heritage industry and best practices in the field. Kirstyn has experience in heritage conservation principles and practices in cultural resource management. Kirstyn also has experience being involved with Stage 1-4 archaeological excavations in the Province of Ontario.

Glossary

Built Heritage Resource (B.H.R.)
Definition: "…a building, structure, monument, installation or any manufactured remnant that contributes to a property's cultural heritage value or interest as identified by a community, including an Indigenous community. built heritage resources are located on property that may be designated under Parts IV or V of the *Ontario Heritage Act*, or that may be included on local, provincial, federal and/or international registers" (Ministry of Municipal Affairs and Housing, 2020, p. 41).

Cultural Heritage Landscape (C.H.L.)
Definition: "…a defined geographical area that may have been modified by human activity and is identified as having cultural heritage value or interest by a community, including an Indigenous community. The area may include features such as buildings, structures, spaces, views, archaeological sites or natural elements that are valued together for their interrelationship, meaning or association. Cultural heritage landscapes may be properties that have been determined to have cultural heritage value or interest under the *Ontario Heritage Act*, or have been included on federal and/or international registers, and/or protected through official plan, zoning by-law, or other land use planning mechanisms" (Ministry of Municipal Affairs and Housing, 2020, p. 42).

Known Built Heritage Resource or Cultural Heritage Landscape
Definition: A known built heritage resource or cultural heritage landscape is a property that has recognized cultural heritage value or interest. This can include a property listed on a Municipal Heritage Register, designated under Part IV or V of the *Ontario Heritage Act*, or protected by a heritage agreement, covenant or easement, protected by the *Heritage Railway Stations Protection Act or the Heritage Lighthouse Protection Act*, identified as a Federal Heritage Building, or located within a U.N.E.S.C.O. World Heritage Site (Ministry of Tourism, Culture and Sport, 2016).

Impact

Definition: Includes negative and positive, direct and indirect effects to an identified built heritage resource and cultural heritage landscape. Direct impacts include destruction of any, or part of any, significant heritage attributes or features and/or unsympathetic or incompatible alterations to an identified resource. Indirect impacts include, but are not limited to, creation of shadows, isolation of heritage attributes, direct or indirect obstruction of significant views, change in land use, land disturbances (Ministry of Tourism Culture and Sport, 2006b). Indirect impacts also include potential vibration impacts.

Potential Built Heritage Resource or Cultural Heritage Landscape

Definition: A potential built heritage resource or cultural heritage landscape is a property that has the potential for cultural heritage value or interest. This can include properties/project area that contain a parcel of land that is the subject of a commemorative or interpretive plaque, is adjacent to a known burial site and/or cemetery, is in a Canadian Heritage River Watershed, or contains buildings or structures that are 40 or more years old (Ministry of Tourism, Culture and Sport, 2016).

Significant

Definition: With regard to cultural heritage and archaeology resources, significant means “resources that have been determined to have cultural heritage value or interest. Processes and criteria for determining cultural heritage value or interest are established by the Province under the authority of the *Ontario Heritage Act.* While some significant resources may already be identified and inventoried by official sources, the significance of others can only be determined after evaluation” (Ministry of Municipal Affairs and Housing, 2020, p. 51).

Table of Contents

Executive Summary 1
Report Accessibility Features 2
Project Personnel 3
Qualified Persons Involved in the Project 4
Glossary 6
Table of Contents 8
1.0 Introduction 11
1.1 Project Overview 11
1.2 Description of Study Area 11
2.0 Methodology 13
2.1 Regulatory Requirements 13
2.2 Municipal/Regional Heritage Policies 14
2.3 Identification of Built Heritage Resources and Cultural Heritage Landscapes 15
2.4 Background Information Review 16
2.4.1 Review of Existing Heritage Inventories 16
2.4.2 Review of Previous Heritage Reporting 17
2.4.3 Community Information Gathering 18
3.0 Summary of Historical Development Within the Study Area 18
3.1 Physiography 19
3.2 Indigenous Land Use and Settlement 20
3.3 Historical Euro-Canadian Township Survey and Settlement 22
3.3.1 Township of Cavan 22

3.3.2 Millbrook 23
3.3.3 Midland Railway 24
3.4 Review of Historical Mapping 25
4.0 Desktop Review 31
4.1 Identification of Known and Potential Built Heritage Resources and Cultural Heritage Landscapes 31
5.0 Results and Future Work 35
5.1 Key Findings 35
5.2 Future Work 35
6.0 References 37

List of Tables

Table 1: Inventory of Known and Potential Cultural Heritage Landscapes within the Study Areas 32

List of Figures

Figure 1: Location of the study area. Base Map: ©OpenStreetMap and contributors, Creative Commons-Share Alike License (C.C.-By-S.A.) 12
Figure 2: The study area overlaid on the 1861 *Map of the County of Durham, Upper Canada* (Tremaine, 1861) 28
Figure 3: The study area overlaid on the 1878 *Illustrated Historical Atlas of the Counties of Northumberland and Durham, Ont.* (Belden, 1878) 28
Figure 4: The study area overlaid on the 1932 topographic map of Rice Lake, Rice Lake Sheet 31D/1 (Department of National Defence, 1932) 29
Figure 5: The study area overlaid on the 1954 aerial photograph of Millbrook, Plate 442.782 (Hunting Survey Corporation Limited, 1954) 30
Figure 6: The study area overlaid on the 1972 topographic map of Millbrook, Millbrook Sheet 31D/1e (Department of Energy, Mines and Resources, 1972) 30
Figure 7: The study area overlaid on the 1985 topographic map of Rice Lake, Rice Lake Sheet 31D/1 (Department of Energy, Mines and Resources, 1985) 31
Figure 8: Location of the Identified Cultural Heritage Landscape (C.H.L.) in the Study Area 34

1.0 Introduction

Archaeological Services Inc. was contracted by R.V. Anderson Associates Ltd., on behalf of the Township of Cavan Monaghan, to conduct a Cultural Heritage Report: Desktop Collection Results (Cultural Heritage Report) as part of the Cavan Monaghan Water and Wastewater Master Servicing Study. The purpose of this report is to present an inventory of known and potential built heritage resources (B.H.R.s) and cultural heritage landscapes (C.H.L.s) to assist with the evaluation of potential water and wastewater servicing alternatives. This submission includes the Desktop Collections Results component of the assessment. Given the high-level nature of the Master Servicing Study, specific locations of the future infrastructure had not been determined at the time of report finalization (July 2023). When the future infrastructure locations are being considered through subsequent studies, they will be assessed against information contained in this report and additional cultural heritage reporting will be undertaken as required.

1.1 Project Overview

The Cavan Monaghan Water and Wastewater Master Servicing Study involves the evaluation of water and wastewater servicing infrastructure needs to accommodate additional growth in the Millbrook Urban Settlement Area. The types of infrastructure required for the servicing may include a new municipal well, watermain extensions, a new water tower, sanitary collection system extensions, and/or wastewater treatment plant expansion. The project study area focuses on three undeveloped areas to the north and west of the community of Millbrook in the Township of Cavan Monaghan.

1.2 Description of Study Area

The project study area focuses on two areas within the Millbrook boundary that are not currently developed, as well as a third area including 50 hectares of land that are outside the Millbrook boundary that are of interest to the Township. For this Cultural Heritage Report, the three study areas are used with a buffer of 50

metres (Figure 1). This project study area has been defined as inclusive of those lands that may contain B.H.R.s or C.H.L.s that may be subject to direct or indirect impacts as a result of the proposed undertaking.

These areas have been identified as “Existing Urban Employment Area”, “Special Development Area”, and “Suggested Additional Residential Area”. The Existing Urban Employment Area and Special Development Area are defined in the Official Plan for Township of Cavan Monaghan (Township of Cavan Monaghan, 2015 [amended in 2021]). Properties within the study area are located in the Township of Cavan Monaghan.

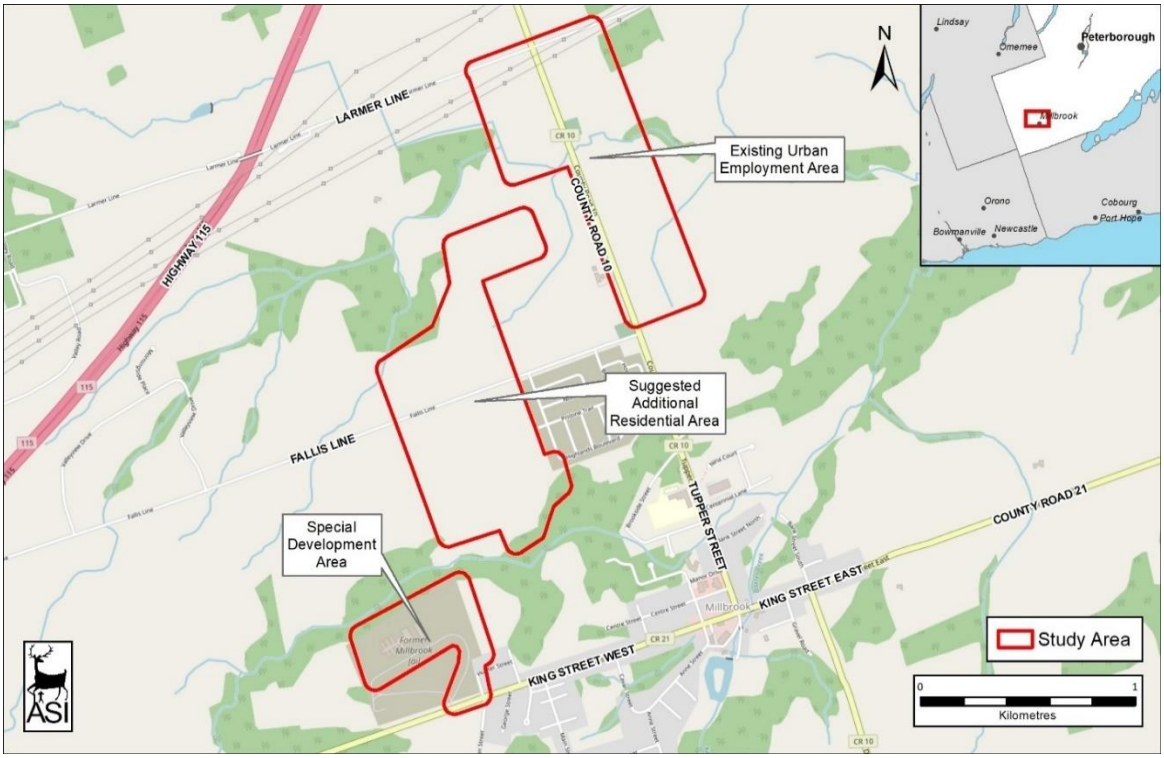


Figure 1: Location of the study area. Base Map: ©OpenStreetMap and contributors, Creative Commons-Share Alike License (C.C.-By-S.A.)

2.0 Methodology

The following sections provide a summary of regulatory requirements and municipal and regional heritage policies that guide this cultural heritage assessment. In addition, an overview of the process undertaken to identify known and potential built heritage resources (B.H.R.s) and cultural heritage landscapes (C.H.L.s) is provided, along with a description of how the preliminary impact assessment will be undertaken.

2.1 Regulatory Requirements

The *Ontario Heritage Act* (O.H.A.) (Ontario Heritage Act, R.S.O. c. O.18, 1990 [as Amended in 2021], 1990) is the primary piece of legislation that determines policies, priorities and programs for the conservation of Ontario's heritage. There are many other provincial acts, regulations and policies governing land use planning and resource development that support heritage conservation, including:

- The *Planning Act* (Planning Act, R.S.O. 1990, c. P.13, 1990), which states that "conservation of features of significant architectural, cultural, historical, archaeological or scientific interest" is a "matter of provincial interest". The *Provincial Policy Statement* (Ministry of Municipal Affairs and Housing, 2020), issued under the *Planning Act*, links heritage conservation to long-term economic prosperity and requires municipalities and the Crown to conserve significant B.H.R.s and C.H.L.s.
- The *Environmental Assessment Act* (Environmental Assessment Act, R.S.O. c. E.18, 1990), which defines "environment" to include cultural conditions that influence the life of humans or a community. Cultural heritage resources, which includes archaeological resources, B.H.R.s and C.H.L.s, are important components of those cultural conditions.

The Ministry of Citizenship and Multiculturalism (hereafter "The Ministry") is charged under Section 2.0 of the O.H.A. with the responsibility to determine policies, priorities, and programs for the conservation, protection, and

preservation of the heritage of Ontario. The *Standards and Guidelines for Conservation of Provincial Heritage Properties* (Ministry of Tourism Culture and Sport, 2010) (hereinafter "*Standards and Guidelines")* apply to properties the Government of Ontario owns or controls that have "cultural heritage value or interest" (C.H.V.I.). The *Standards and Guidelines* provide a series of guidelines that apply to provincial heritage properties in the areas of identification and evaluation; protection; maintenance; use; and disposal. For the purpose of this report, the *Standards and Guidelines* provide points of reference to aid in determining potential heritage significance in the identification of B.H.R.s and C.H.L.s. While not directly applicable for use in properties not under provincial ownership, the *Standards and Guidelines* are regarded as best practice for guiding heritage assessments and ensure that additional identification and mitigation measures are considered.

Similarly, the *Ontario Heritage Tool Kit* (Ministry of Culture, 2006) provides a guide to evaluate heritage properties. To conserve a B.H.R. or C.H.L., the *Ontario Heritage Tool Kit* states that a municipality or approval authority may require a heritage impact assessment and/or a conservation plan to guide the approval, modification, or denial of a proposed development.

2.2 Municipal/Regional Heritage Policies

The study area is located within the Township of Cavan Monaghan, in the County of Peterborough. Policies relating to B.H.R.s and C.H.L.s were reviewed from the following sources:

- *Official Plan for Township of Cavan Monaghan* (Township of Cavan Monaghan, 2015 [amended in 2021])
- *County of Peterborough Official Plan* (County of Peterborough, 1994)
- *Oak Ridges Moraine Conservation Plan* (Ministry of Municipal Affairs and Housing, 2017)

2.3 Identification of Built Heritage Resources and Cultural Heritage Landscapes

This Cultural Heritage Report follows guidelines presented in the *Ontario Heritage Tool Kit* (Ministry of Culture, 2006) and *Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes* (Ministry of Tourism, Culture and Sport, 2016). The objective of this report is to present an inventory of known and potential B.H.R.s and C.H.L.s, and to provide a preliminary understanding of known and potential B.H.R.s and C.H.L.s located within areas anticipated to be directly or indirectly impacted by the proposed project.

In the course of the cultural heritage assessment process, all potentially affected B.H.R.s and C.H.L.s are subject to identification and inventory. Generally, when conducting an identification of B.H.R.s and C.H.L.s within a study area, three stages of research and data collection are undertaken to appropriately establish the potential for and existence of B.H.R.s and C.H.L.s in a geographic area: background research and desktop data collection; field review; and identification.

Background historical research, which includes consultation of primary and secondary source research and historical mapping, is undertaken to identify early settlement patterns and broad agents or themes of change in a study area. This stage in the data collection process enables the researcher to determine the presence of sensitive heritage areas that correspond to nineteenth- and twentieth-century settlement and development patterns. To augment data collected during this stage of the research process, federal, provincial, and municipal databases and/or agencies are consulted to obtain information about specific properties that have been previously identified and/or designated as having cultural heritage value. Typically, resources identified during these stages of the research process are reflective of particular architectural styles or construction methods, associated with an important person, place, or event, and contribute to the contextual facets of a particular place, neighbourhood, or intersection.

While the subject Cultural Heritage Report provides desktop collection results only, a field review is typically undertaken to confirm the location and condition of previously identified B.H.R.s and C.H.L.s. The field review is also used to identify potential B.H.R.s or C.H.L.s that have not been previously identified on federal, provincial, or municipal databases or through other appropriate agency data sources.

During the cultural heritage assessment process, a property is identified as a potential B.H.R. or C.H.L. based on research, the Ministry screening tool, and professional expertise. In addition, use of a 40-year-old benchmark is a guiding principle when conducting a preliminary identification of B.H.R.s and C.H.L.s. While identification of a resource that is 40 years old or older does not confer outright heritage significance, this benchmark provides a means to collect information about resources that may retain heritage value. Similarly, if a resource is slightly younger than 40 years old, this does not preclude the resource from having cultural heritage value or interest.

The scope of work for this assessment does not include a field review, which may yield additional potential B.H.R.s or C.H.L.s. As such, there is the potential for additional B.H.R.s and C.H.L.s to be located within the study area.

2.4 Background Information Review

To make an identification of previously identified known or potential B.H.R.s and C.H.L.s within the study area, the following sections present the resources that were consulted as part of this Cultural Heritage Report.

2.4.1 Review of Existing Heritage Inventories

A number of resources were consulted in order to identify previously identified B.H.R.s and C.H.L.s within the study area. These resources, reviewed on 8 January 2021, include:

- Cavan Monaghan Cultural Resources available online through Peterborough County Public GIS (Peterborough County, n.d.);

- Historical maps (including historical atlases, topographic maps, and aerial photography);
- The *Ontario Heritage Act Register* (Ontario Heritage Trust, n.d.b);
- The *Places of Worship Inventory* (Ontario Heritage Trust, n.d.c);
- The inventory of Ontario Heritage Trust easements (Ontario Heritage Trust, n.d.a);
- The Ontario Heritage Trust's *An Inventory of Provincial Plaques Across Ontario*: a PDF of Ontario Heritage Trust Plaques and their locations (Ontario Heritage Trust, 2018);
- Inventory of known cemeteries/burial sites in the Ontario Genealogical Society's online databases (Ontario Genealogical Society, n.d.);
- Canada's Historic Places website: available online, the searchable register provides information on historic places recognized for their heritage value at the local, provincial, territorial, and national levels (Parks Canada, n.d.a);
- Directory of Federal Heritage Designations: a searchable on-line database that identifies National Historic Sites, National Historic Events, National Historic People, Heritage Railway Stations, Federal Heritage Buildings, and Heritage Lighthouses (Parks Canada, n.d.b);
- Canadian Heritage River System: a national river conservation program that promotes, protects and enhances the best examples of Canada's river heritage (Canadian Heritage Rivers Board and Technical Planning Committee, n.d.); and,
- United Nations Educational, Scientific and Cultural Organization (U.N.E.S.C.O.) World Heritage Sites (U.N.E.S.C.O. World Heritage Centre, n.d.).

2.4.2 Review of Previous Heritage Reporting

Additional cultural heritage studies undertaken within parts of the study area were also reviewed. These include:

- The Cultural Resource Mapping Project (Township of Cavan Monaghan & EcoVue Consulting Services Inc., 2011)

2.4.3 Community Information Gathering

The following individuals, groups, and/or organizations were contacted to gather information on known and potential B.H.R.s and C.H.L.s, active and inactive cemeteries, and areas of identified Indigenous interest within the study area:

- Karen Ellis, Director of Planning, Township of Cavan Monaghan (email communication 20 and 22 January 2021). Email correspondence confirmed that the Township of Cavan Monaghan does not maintain a Heritage Register. Karen Ellis also confirmed that the properties identified on the Cavan Monaghan Cultural Resources on the Peterborough County – Public GIS website (Peterborough County, n.d.) and the Cultural Resource Mapping Project (Township of Cavan Monaghan & EcoVue Consulting Services Inc., 2011) have not been evaluated, listed, or designated by the Township.
- The Ministry of Citizenship and Multiculturalism (email communication 20 and 26 January 2021)[1]. Email correspondence confirmed that there are no additional previously identified heritage resources or concerns regarding the study area.
- The Ontario Heritage Trust (email communications 20 January 2021). A response indicated that there are no conservation easements or Trust-owned properties within the study area.

3.0 Summary of Historical Development Within the Study Area

This section provides a brief summary of historical research. A review of available primary and secondary source material was undertaken to produce a contextual overview of the study area, including a general description of physiography, Indigenous land use, and Euro-Canadian settlement.

[1] Contacted at registrar@ontario.ca.

3.1 Physiography

The study area is located within the Peterborough Drumlin Field which extends from Simcoe County east to Hastings County and is generally characterized by rolling till plains overlying limestone bedrock. The region is approximately 4,532 kilometres squared and contains over 3,000 drumlins in addition to many other drumlinoid hills and surface flutings (Chapman & Putnam, 1984). The drumlins are composed of highly calcareous till but there are local differences in composition. The till plains of the regions were formed during the retreat of the Lake Ontario ice lobe of the Laurentide glacier and they indicate directionality of glacial advance and retreat. Till is produced from the advance of continental glacial ice. Soil and rock is carried forward by the ice, mixed and milled, producing a heterogeneous soil which is characteristic of glaciations (Chapman & Putnam, 1984).

Those looking to make use of the lands within the Peterborough drumlin field were faced with the challenges of stoniness, steep slopes, and wet swampy areas. Euro-Canadian settlers to the area also had another set of difficulties when trying to farm the area because of the way in which the land survey was completed. When the land was surveyed into townships with concession and lots, the base lines were created parallel to the shores of the Great Lakes. In the Peterborough drumlin field this led to roads and farms that were on angles with the drumlin. This created a large number of triangular and diamond-shaped fields and many areas that were not utilized as it was too small or too awkward to be worked successfully (Chapman & Putnam, 1984).

Road corner hamlets developed within the Peterborough drumlin fields. In some instances, the location of rural hamlets and rural residences were influenced by the physiography, the sites overlooking a drumlin landscape would have a visual appeal to those who chose to settle there. The odd corners on many of the sloping farms have more value as building lots than they have as agricultural lots leading to development along the rural-urban boundaries (Chapman & Putnam, 1984).

3.2 Indigenous Land Use and Settlement

Southern Ontario has been occupied by human populations since the retreat of the Laurentide glacier approximately 13,000 years ago, or 11,000 Before the Common Era (B.C.E.) (Ferris, 2013)[2]. During the Paleo period (c. 11,000 B.C.E. to 9,000 B.C.E.), groups tended to be small, nomadic, and non-stratified. The population relied on hunting, fishing, and gathering for sustenance, though their lives went far beyond subsistence strategies to include cultural practices including but not limited to art and astronomy. Fluted points, beaked scrapers, and gravers are among the most important artifacts to have been found at various sites throughout southern Ontario, and particularly along the shorelines of former glacial lakes. Given the low regional population levels at this time, evidence concerning Paleo period groups is very limited (C. J. Ellis & Deller, 1990).

Moving into the Archaic period (c. 9,000 B.C.E. to 1,000 B.C.E.), many of the same roles and responsibilities continued as they had for millennia, with groups generally remaining small, nomadic, and non-hierarchical. The seasons dictated the size of groups (with a general tendency to congregate in the spring/summer and disperse in the fall/winter), as well as their various sustenance activities, including fishing, foraging, trapping, and food storage and preparation. There were extensive trade networks which involved the exchange of both raw materials and finished objects such as polished or ground stone tools, beads, and notched or stemmed projectile points. Furthermore, mortuary ceremonialism was evident, meaning that there were burial practices and traditions associated with a group member's death (C. J. Ellis et al., 2009; C. J. Ellis & Deller, 1990).

The Woodland period (c. 1,000 B.C.E. to 1600 C.E.) saw several trends and aspects of life remain consistent with previous generations. Among the more notable

[2] While many types of information can inform the precontact settlement of Ontario, such as oral traditions and histories, this summary provides information drawn from archaeological research conducted in southern Ontario over the last century.

changes, however, was the introduction of pottery, the establishment of larger occupations and territorial settlements, incipient horticulture, more stratified societies, and more elaborate burials. Later in this period, settlement patterns, foods, and the socio-political system continued to change. A major shift to agriculture occurred in some regions, and the ability to grow vegetables and legumes such as corn, beans, and squash ensured long-term settlement occupation and less dependence upon hunting and fishing. This development contributed to population growth as well as the emergence of permanent villages and special purpose sites supporting those villages. Furthermore, the socio-political system shifted from one which was strongly kinship based to one that involved tribal differentiation as well as political alliances across and between regions (Birch et al., 2021; Dodd et al., 1990; C. J. Ellis & Deller, 1990; Williamson, 1990).

The arrival of European trade goods in the sixteenth century, Europeans themselves in the seventeenth century, and increasing settlement efforts in the eighteenth century all significantly impacted traditional ways of life in Southern Ontario. Over time, war and disease contributed to death, dispersion, and displacement of many Indigenous peoples across the region. The Euro-Canadian population grew in both numbers and power through the eighteenth and nineteenth centuries and treaties between colonial administrators and First Nations representatives began to be negotiated.

The study area is within Treaty 20 the Rice Lake Purchase of 1818 and the Williams Treaties of 1923, on the traditional territory of the Michi Saagiig and Chippewa Nations, collectively known as the Williams Treaties First Nations, including the Mississaugas of Alderville First Nation, Curve Lake First Nation, Hiawatha First Nation, Scugog Island First Nation and the Chippewas of Beausoleil First Nation, Georgina Island First Nation and the Rama First Nation (Williams Treaties First Nations, 2017). In October and November of 1923, the governments of Canada and Ontario, chaired by A.S. Williams, signed treaties with the Chippewa and Mississauga for three large tracts of land in central Ontario and the northern shore of Lake Ontario which had never been included in previous

treaties (Crown-Indigenous Relations and Northern Affairs, 2013). Part of the Williams Treaties area includes lands originally negotiated under the Rice Lake Treaty, Treaty Number 20, signed on November 5, 1818 between the Mississaugas in the Rice Lake area and the Crown, which opened up colonization for settlers (Crown-Indigenous Relations and Northern Affairs, 2016).

In 2018 the Government of Canada reached a settlement with the Williams Treaties First Nations reaffirming the recognized Treaty harvesting rights in the Williams Treaties territories of each of the seven nations.

3.3 Historical Euro-Canadian Township Survey and Settlement

The first Europeans to arrive in the area were transient merchants and traders from France and England, who followed Indigenous pathways and set up trading posts at strategic locations along the well-travelled river routes. All of these occupations occurred at sites that afforded both natural landfalls and convenient access, by means of the various waterways and overland trails, into the hinterlands. Early transportation routes continued the use of existing Indigenous trails that typically followed the highlands adjacent to various creeks and rivers (Archaeological Services Inc., 2006). Early European settlements occupied similar locations as Indigenous settlements as they were generally accessible by trail or water routes and would have been in locations with good soil and suitable topography to ensure adequate drainage.

Historically, the study area is located in the Former Township of Cavan, County of Durham in Lot 10, Concession V; Lot 11, Concession V – VI; and Lots 12-13, Concession VI.

3.3.1 Township of Cavan

The study area is located in the former Township of Cavan. The Township of Cavan was surveyed in 1816-1817 and John Deyell assisted surveyor Samuel Wilmot in the task. The first Euro-Canadian to settle in the township was John

Deyell in 1816. Deyell had come from County Monaghan in Ireland and he acquired land opposite of the present-day hamlet of South Monaghan. At that location, he constructed the township's first tavern. Deyell also built the township's first grist and sawmill at present-day Millbrook. This was later replaced with another mill, Needler's flour mill, which was destroyed by fire. A subsequent mill was in operation at the location until 1966 (Mika & Mika, 1977).

By 1830, the township had four mills, five stores, and two distilleries. The first church was a log structure, St. John's Anglican, in the hamlet of Ida. The land for the first schoolhouse was donated by settler, John Deyell. The main industry of the township was agriculture and an Agricultural Society was organized as early as 1859. It continues to be a mainstay for those living within the township. The township had been part of the United Counties of Northumberland and Durham until 1974 (Mika & Mika, 1977). The Township of Cavan amalgamated with the Township of North Monaghan and the Village of Millbrook in 1997 (*Municipal Restructuring Activity Summary Table*, 2018).

3.3.2 Millbrook

The study area is located north and west of the historical community of Millbrook. In 1816, John Deyell came to the area from Ireland and constructed a grist mill by a brook, giving Millbrook its name. Another early Euro-Canadian settler was John Thorn, who made bricks and burned limestone for lime in order to construct his house. Thorn also built the first mill to run by hand to grind corn (Mika & Mika, 1981).

Millbrook grew into a prosperous village with many stores and other businesses including: Needler's three-storey flour mill, McIvor's mill for oatmeal, a cooper shop, and a pump factory. The New Connexion Church was the first church in the village, followed by the Anglican Parish of Cavan organizing in 1819. In 1881, the cornerstone of the Methodist Church was laid (Mika & Mika, 1981).

The village's Town Hall was constructed in 1877 and the present building was built in 1880, replacing the first which was destroyed by fire. For a time, the old Town

Hall was used as the schoolhouse, until a red brick school was built on Union Street. This building burned down in 1887 and a white brick school was opened in 1890. In 1880, Millbrook was incorporated as a village. The population of the community was 1,500 at the time. The library was organized by David Hampton in 1894 with the assistance of the Mechanics' Institute. The following year it became a free Public Library (Mika & Mika, 1981).

The Village of Millbrook amalgamated with the Township of Cavan and the Township of North Monaghan in 1997 (*Municipal Restructuring Activity Summary Table*, 2018).

3.3.3 Midland Railway

Through the northern portion of the study area is the former alignment of the Midland Railway. In 1846, the Peterborough and Port Hope Railway Company was planned to run from Port Hope to Peterborough around Rice Lake. Initially growth of the rail line was slow due to financial issues and a new charter was issued in 1854 for the Port Hope, Lindsay, and Beaverton Railway Company. Four years later the company constructed a branch line from Millbrook to Peterborough. The railway changed its name to the Midland Railway of Canada in 1869 when it planned for expansion to Beaverton and beyond. During the 1880s, following a decade of growth the company was in financial strain, as were other rail lines, and in 1882, a merger of six rail road companies under the Midland Railway of Canada saw its total mileage swell from 144 miles to 465 miles (Toronto Railway Historical Association, 2020).

The abandonment of the original mainline between Omemee and Millbrook Junction occurred in 1882 when the company decided to build a direct line between Peterborough and Omemee. The company was later taken over by the Grand Trunk Railroad in 1893 and subsequently the Canadian National Railway in 1923 (Andreae, 1997; Toronto Railway Historical Association, 2020).

3.4 Review of Historical Mapping

The 1861 *Map of the County of Durham, Upper Canada* (Tremaine, 1861) and the 1878 *Illustrated Historical Atlas of the Counties of Northumberland and Durham, Ont.* (Belden, 1878), were examined to determine the presence of historical features within the study area during the nineteenth century (Figure 2 and Figure 3).

It should be noted, however, that not all features of interest were mapped systematically in the Ontario series of historical atlases. For instance, they were often financed by subscription limiting the level of detail provided on the maps. Moreover, not every feature of interest would have been within the scope of the atlases. The use of historical map sources to reconstruct or predict the location of former features within the modern landscape generally begins by using common reference points between the various sources. The historical maps are geo-referenced to provide the most accurate determination of the location of any property on a modern map. The results of this exercise can often be imprecise or even contradictory, as there are numerous potential sources of error inherent in such a process, including differences of scale and resolution, and distortions introduced by reproduction of the sources.

Nineteenth-century mapping shows that the study area was located within a rural agricultural context to the west and north of the village of Millbrook (Figure 2 and Figure 3). The mapping illustrates that Queen Street, Hunter Street, County Road 21, County Road 10, Fallis Line, and Larmer Line were all historically surveyed roads following their present alignment. The 1861 mapping depicted a small development at Queen Street and Hunter Street is indicated by the dark shading on the mapping. A Wesleyan Methodist church is illustrated north of the tributary of Baxter Creek, east of County Road 10 and a schoolhouse is depicted northwest of the intersection of County Road 10 and Larmer Line. The Midland Railroad is illustrated curving from the south to the northwest through the study area. The 1878 mapping depicts the study area within a similar context. The development around Queen Street and Hunter Street has grown easterly. Seven residences are

now illustrated within the study area. A cemetery is now depicted adjacent to the location of the earlier church.

In addition to nineteenth-century mapping, historical topographic mapping and aerial photographs from the twentieth century were examined. This report presents maps and aerial photographs from 1932, 1954, 1972, and 1985 (Figure 4 to Figure 7).

The twentieth-century mapping continues to depict the study area in a rural agricultural context outside of the village of Millbrook. The 1932 topographic map (Figure 4

Figure 5: The study area overlaid on the 1954 aerial photograph of Millbrook, Plate 442.782 (Hunting Survey Corporation Limited, 1954)

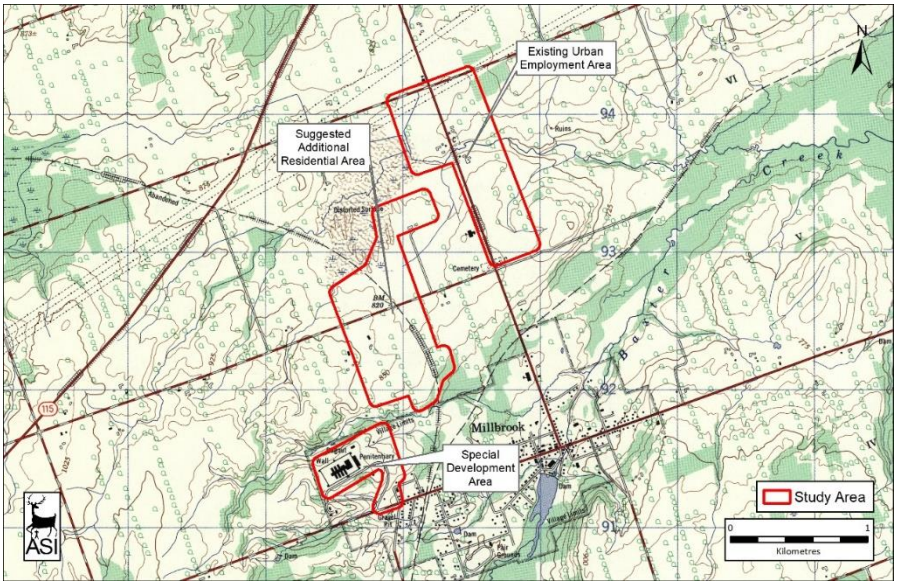


Figure 6: The study area overlaid on the 1972 topographic map of Millbrook, Millbrook Sheet 31D/1e (Department of Energy, Mines and Resources, 1972)

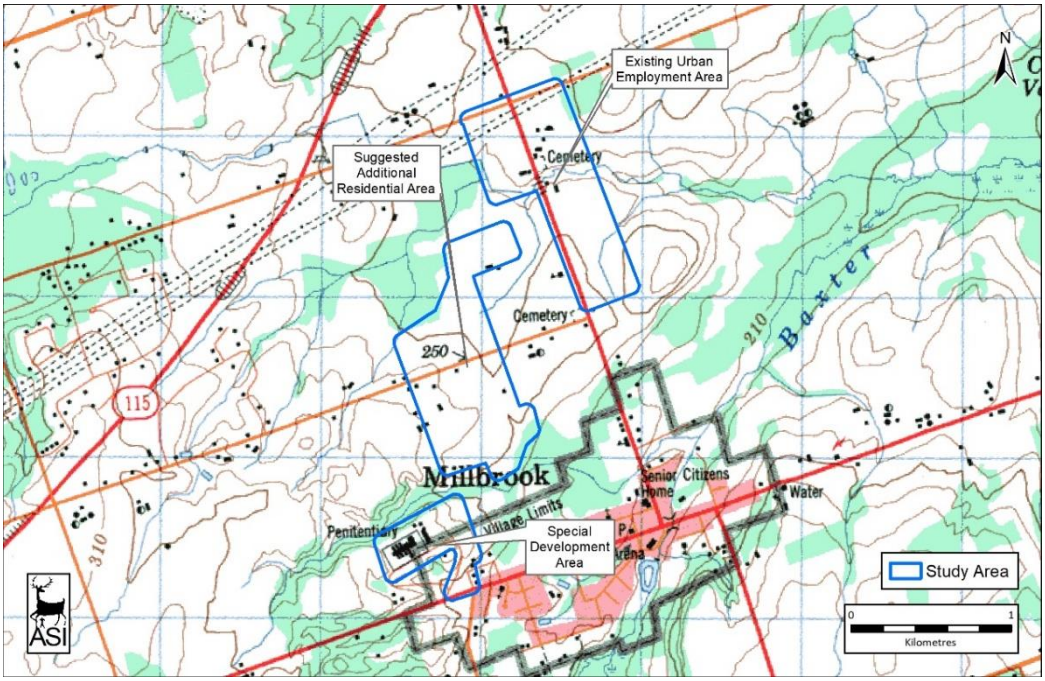


Figure 7: The study area overlaid on the 1985 topographic map of Rice Lake, Rice Lake Sheet 31D/1 (Department of Energy, Mines and Resources, 1985)

) illustrates County Road 21 and County Road 10 as improved roads under 20 feet wide. The other roads are depicted as dirt roads. The Midland Railway is now labelled as an abandoned line. The 1954 aerial photograph (Figure 5) shows the agricultural context of the study area, a patchwork of agricultural fields and tree lines are clearly visible. The 1972 topographic map (Figure 6) depicts the southern study area within the village of Millbrook limits with a penitentiary now constructed within it. County Road 10 is illustrated as a hard surface, all weather road; the other roadways are all depicted as looser stabilized surface, all weather roads. The 1985 topographic map (Figure 7) illustrates the study area in a similar context to earlier mapping. The village limits have moved to the south. Some additional buildings have been constructed east of County Road 10 and north of the tributary of Baxter Creek, as well as an additional building south of Fallis Line.

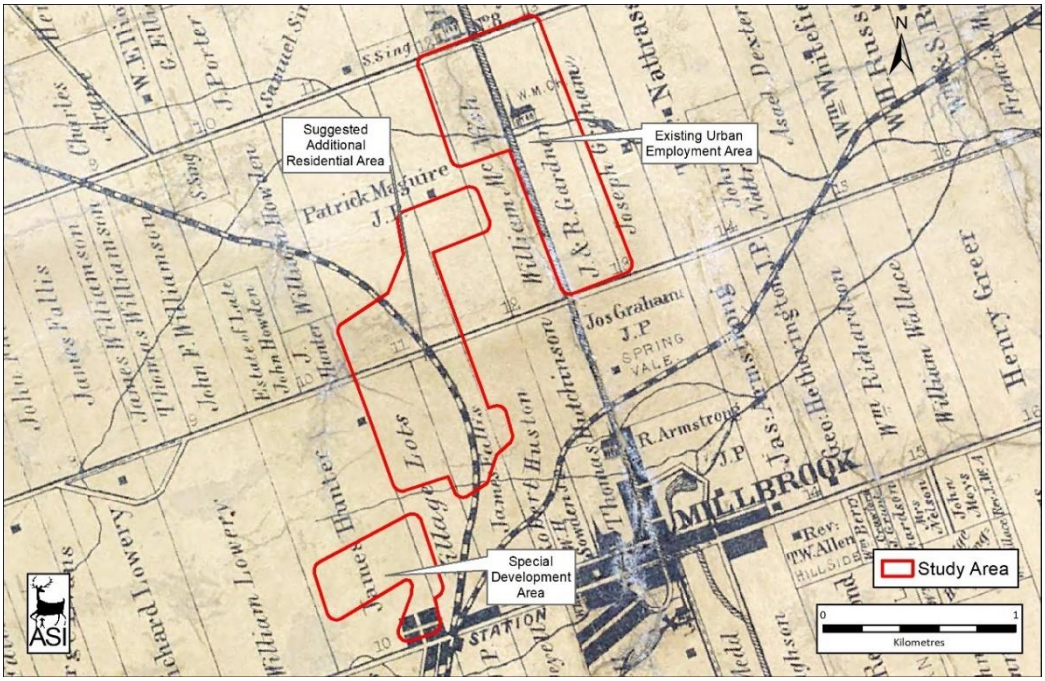


Figure 2: The study area overlaid on the 1861 *Map of the County of Durham, Upper Canada* (Tremaine, 1861)

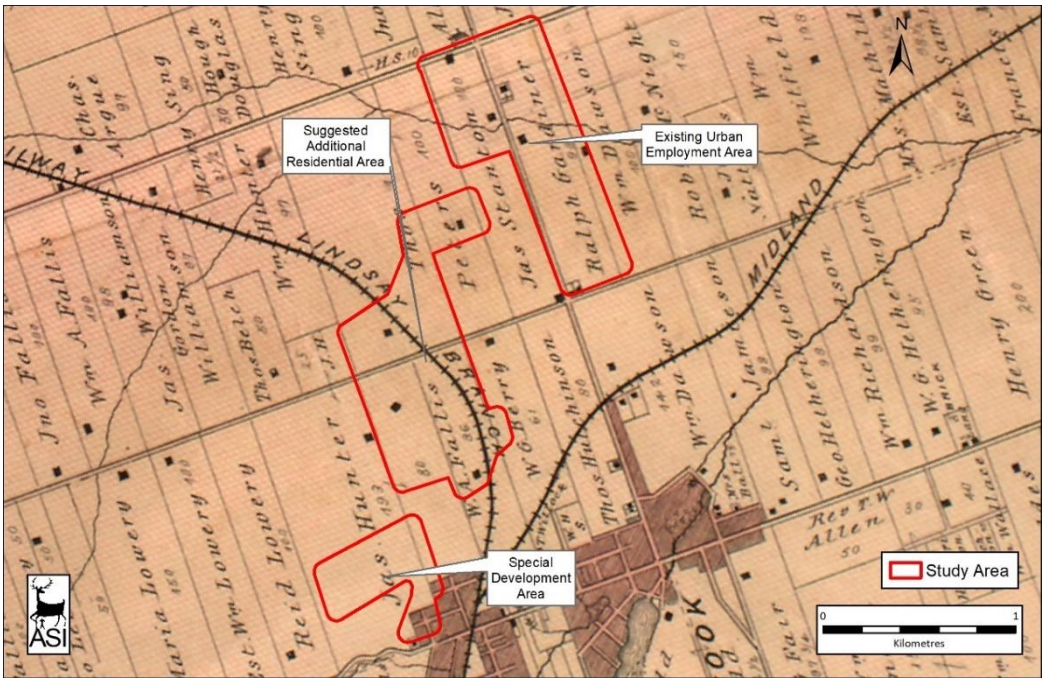


Figure 3: The study area overlaid on the 1878 *Illustrated Historical Atlas of the Counties of Northumberland and Durham, Ont.* (Belden, 1878)

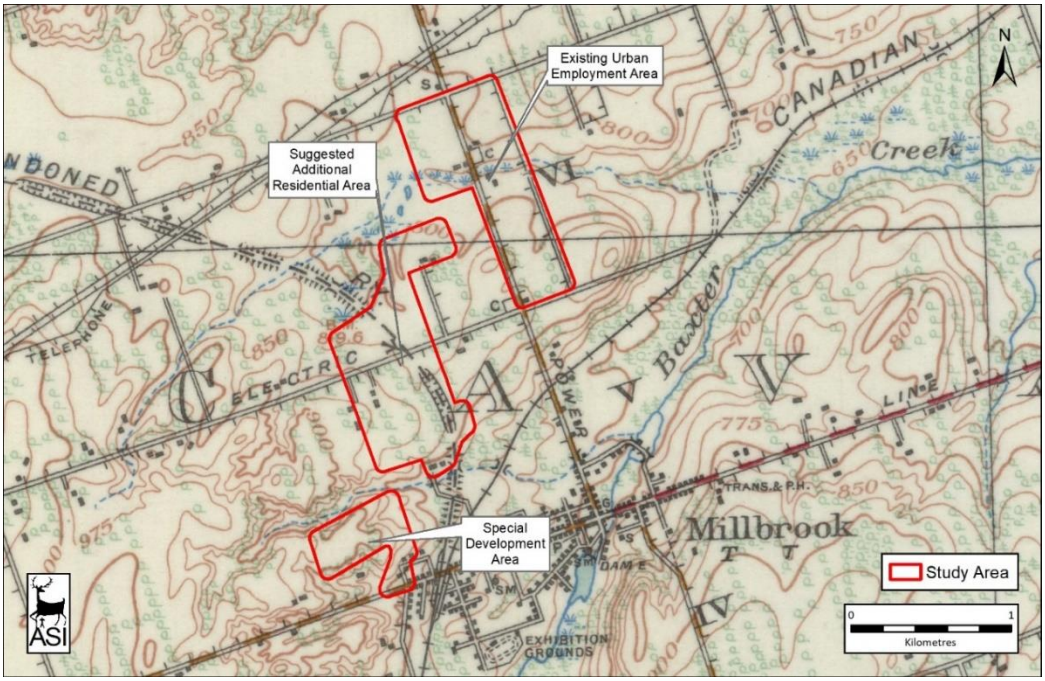


Figure 4: The study area overlaid on the 1932 topographic map of Rice Lake, Rice Lake Sheet 31D/1 (Department of National Defence, 1932)

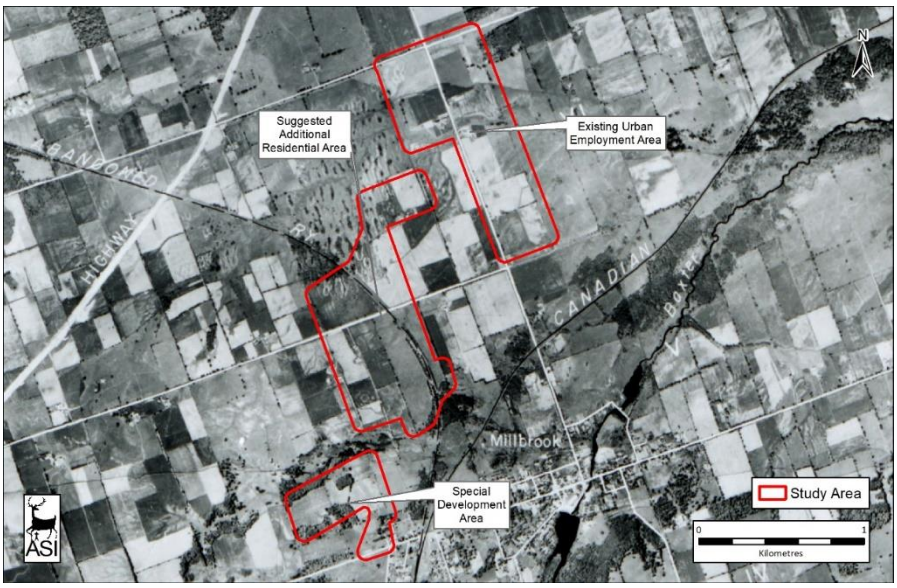


Figure 5: The study area overlaid on the 1954 aerial photograph of Millbrook, Plate 442.782 (Hunting Survey Corporation Limited, 1954)

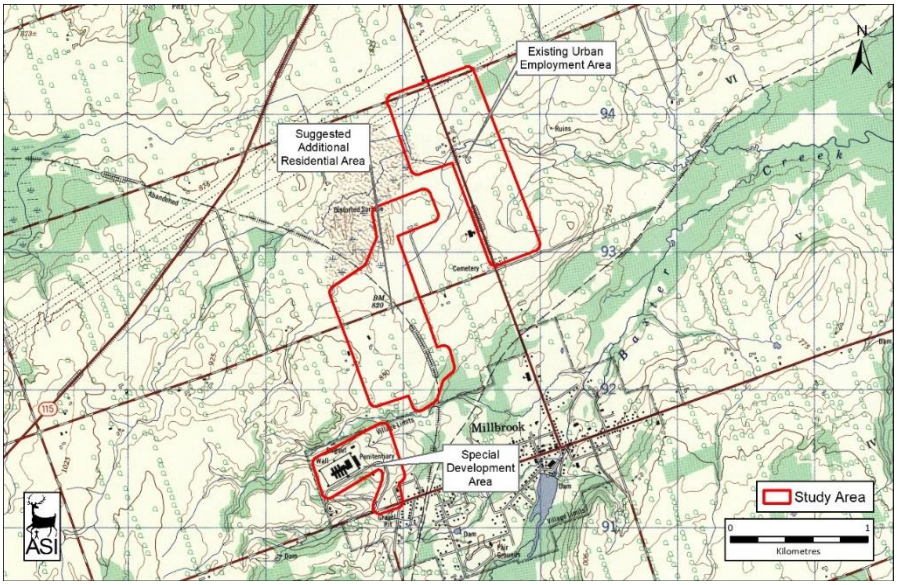


Figure 6: The study area overlaid on the 1972 topographic map of Millbrook, Millbrook Sheet 31D/1e (Department of Energy, Mines and Resources, 1972)

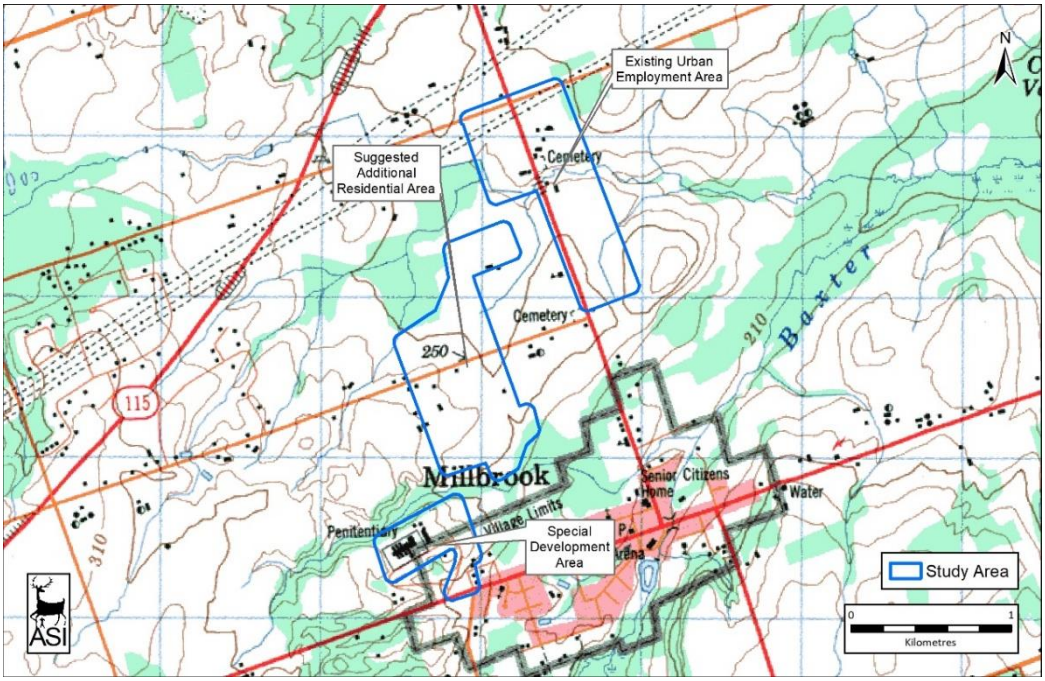


Figure 7: The study area overlaid on the 1985 topographic map of Rice Lake, Rice Lake Sheet 31D/1 (Department of Energy, Mines and Resources, 1985)

4.0 Desktop Review

4.1 Identification of Known and Potential Built Heritage Resources and Cultural Heritage Landscapes

Based on the results of the background research, eight potential cultural heritage landscapes (C.H.L.s) were identified within the study area. All eight properties are identified on the Cavan Monaghan Cultural Resources on the Peterborough County – Public GIS website (Peterborough County, n.d.) and the Cultural Resource Mapping Project (Township of Cavan Monaghan & EcoVue Consulting Services Inc., 2011). A detailed inventory of potential C.H.L.s within the study area is presented in Table 1. See Figure 8 for mapping showing the location of identified C.H.L.s.

Table 1: Inventory of Known and Potential Cultural Heritage Landscapes within the Study Areas

Feature ID	Study Areas	Type of Property	Address or Location	Heritage Status and Recognition	Description of Property and Known or Potential CHVI
C.H.L. 1	Existing Urban Employment Area	Farmscape	1069 County Road 10 and Roll - 150901003005700	Potential C.H.L. – Identified in the Cavan Monaghan Cultural Resources	The C.H.L. encapsulates two property parcels that were once a singular parcel that has since been severed. The farmscape is located east of County Road 10, south of Larmer Line. The potential heritage attributes include a one-and-a-half storey red brick Ontario cottage farmhouse, long driveways leading to the barns and outbuildings, and surrounding agricultural fields. The farmhouse property has been severed from the property containing the outbuildings and fields. The 1878 Illustrated Historical Atlas (Figure 3) illustrates a residence in this general location and indicates that the property owner was Ralph Gardiner.
C.H.L. 2	Existing Urban Employment Area	Farmscape	1080 County Road 10	Potential C.H.L. – Identified in the Cavan Monaghan Cultural Resources	The farmscape is located west of County Road 10, south of Larmer Line. The potential heritage attributes include a two-storey red brick farmhouse, a tree-lined driveway, barns and outbuildings, and surrounding agricultural fields. The 1878 Illustrated Historical Atlas (Figure 3) illustrates a residence in this general location and indicates that the property owner was Jas. Stanton.
C.H.L. 3	Existing Urban Employment Area	Farmscape	1097 County Road 10	Potential C.H.L. – Identified in the Cavan Monaghan Cultural Resources	The farmscape is located east of County Road 10, south of Larmer Line. The potential heritage attributes include a two-storey house, barns, outbuildings, and tree-lined property parcel. The 1861 map (Figure 2) illustrates a Wesleyan Methodist church in this general location and indicates that the property owner was J. & R. Gardiner.
C.H.L. 4	Existing Urban Employment Area	Cemetery	Roll - 150901003005600	Potential C.H.L. – Identified in the Cavan Monaghan Cultural Resources	The Gardiner Cemetery is located east of County Road 10, south of Larmer Line. The potential heritage attributes include the gravestones which remain in situ in rows parallel the County Road 10 and mature trees. The 1878 Illustrated Historical Atlas (Figure 3) illustrates a cemetery in this general location and indicates that the property owner was Ralph Gardiner.

Feature ID	Study Areas	Type of Property	Address or Location	Heritage Status and Recognition	Description of Property and Known or Potential CHVI
C.H.L. 5	Existing Urban Employment Area	Farmscape	1187 County Road 10	Potential C.H.L. – Identified in the Cavan Monaghan Cultural Resources	The farmscape is located at the northeast corner of the County Road 10 and Larmer Line intersection. The potential heritage attributes include a red brick farmhouse, long driveway, barn, outbuildings, and surrounding agricultural fields. The 1878 Illustrated Historical Atlas illustrates a residence in this general location and indicates that the property owner was Jno. Hutchinson Jr.
C.H.L. 6	Existing Urban Employment Area	Cemetery	Roll - 150901003006100	Potential C.H.L. – Identified in the Cavan Monaghan Cultural Resources	The Grace Presbyterian Cemetery is located at the northwest corner of County Road 10 and Fallis Line intersection. The potential heritage attributes include the gravestones which remain in situ in rows parallel the County Road 10 and mature trees. The 1932 topographic map (Figure 4) illustrates a cemetery in this location.
C.H.L. 7	Existing Urban Employment Area	Farmscape	987 Syer Line	Potential C.H.L.– Identified in the Cavan Monaghan Cultural Resources	The farmscape is located south of Syer Line, east of Highway 115. The potential heritage attributes include a one-and-a-half storey frame house, barn, driveway, and surrounding agricultural fields. The 1878 Illustrated Historical Atlas (Figure 3) illustrates a residence in this general location and indicates that the property owner was Jno. Sutton.
C.H.L. 8	Special Development Area	Former Penitentiary	706 County Road 21	Potential C.H.L. – Identified in the Cavan Monaghan Cultural Resources	The C.H.L. contains the property parcel of the former Millbrook Correction Centre, also known as the Old Millbrook Jail. No structures are currently on the property. The circulation route begins in the adjacent parcel and loops around to 706 County Road 21. The northern portion of the property includes naturalized areas as part of the Oak Ridges Moraines and contains scenic views. Trees have been planted along the inner side of the loop. The 1972 topographic map (Figure 6) illustrates the penitentiary in the location of the former jail. According to Google Earth aerial imagery, the structures on the property were demolished in 2014-2015.

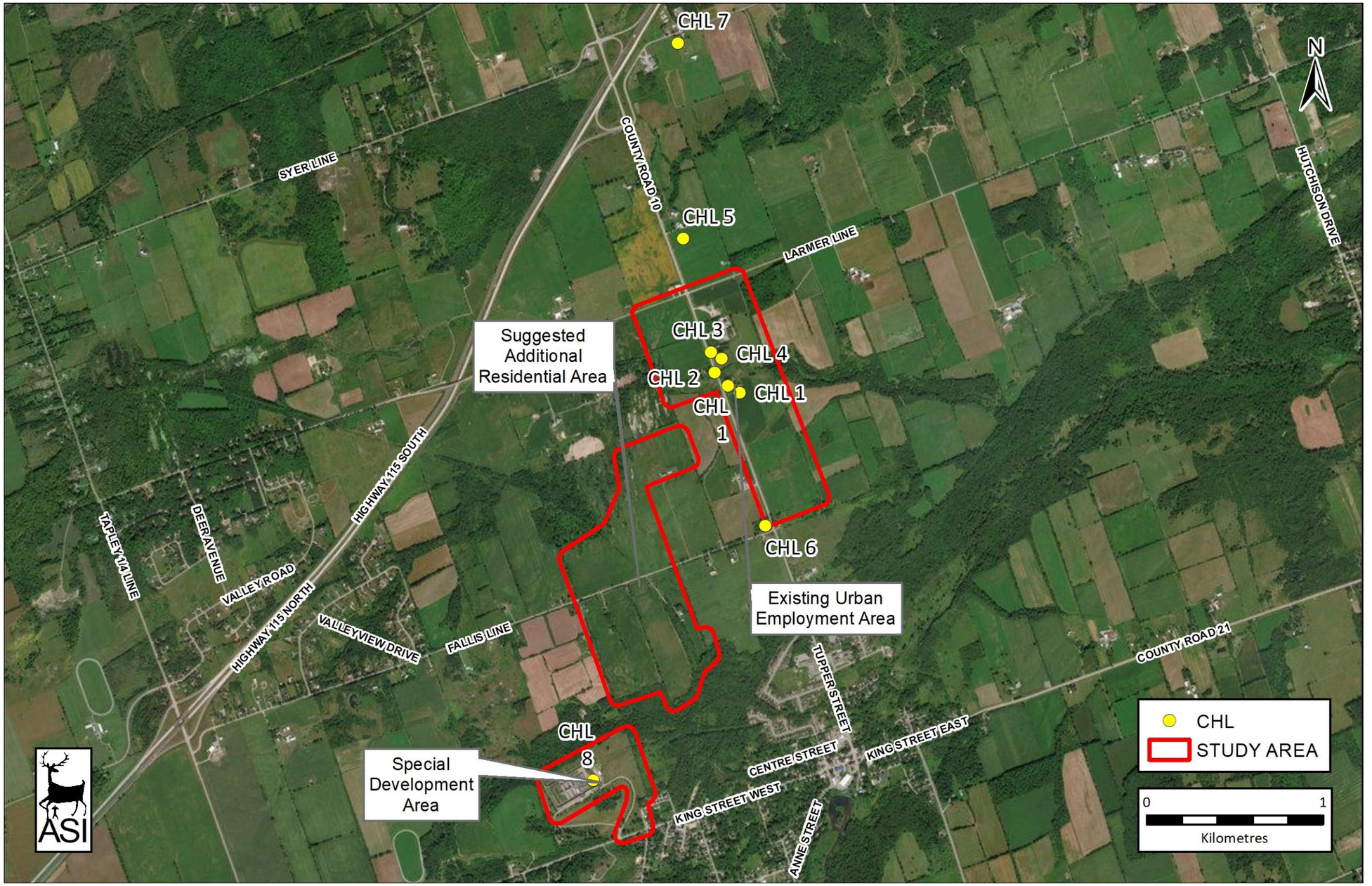


Figure 8: Location of the Identified Cultural Heritage Landscape (C.H.L.) in the Study Area

5.0 Results and Future Work

The results of background historical research and a review of secondary source material, including historical mapping, indicate a study area with a rural land use history dating back to the early nineteenth century. A review of federal, provincial, and municipal registers, inventories, and databases revealed that there are eight potential cultural heritage landscapes (C.H.L.s) within the Cavan Monaghan Water and Wastewater Master Servicing Study project study area.

5.1 Key Findings

A total of eight C.H.L.s were identified within the study area:

- Seven C.H.L.s (C.H.L. 1 – 7) were identified within the Existing Urban Employment Area study area; and
- One C.H.L. (C.H.L. 8) was identified within the Special Development Area study area.
- The eight C.H.L.s are all identified in the Cavan Monaghan Cultural Resources on the Peterborough County – Public GIS website (Peterborough County, n.d.) and the Cultural Resource Mapping Project (Township of Cavan Monaghan & EcoVue Consulting Services Inc., 2011).
- The identified C.H.L.s are historically, architecturally, and contextually associated with land use patterns in the Township of Cavan Monaghan.

5.2 Future Work

The results presented in this desktop report are of the previously identified C.H.L.s within the study area. As the scope of work for this assessment does not include a field review, there is the potential for additional built heritage resources and C.H.L.s to be identified within the study area. Given the high-level nature of the Master Servicing Study, specific locations of the future infrastructure had not been determined at the time of report finalization (July 2023). When the future infrastructure locations are being considered through

subsequent studies, they will be assessed against information contained in this report and additional cultural heritage reporting will be undertaken as required.

6.0 References

Andreae, C. (1997). *Lines of Country: An Atlas of Railway and Waterway History in Canada*. Boston Mills Press.

Archaeological Services Inc. (2006). *Historical Overview and Assessment of Archaeological Potential Don River Watershed, City of Toronto*. Report on file with the Ontario Ministry of Tourism, Culture and Sport.

Belden, H. (1878). *Illustrated Historical Atlas of the Counties of Northumberland and Durham, Ont.* [Map].

Birch, J., Manning, S. W., Sanft, S., & Conger, M. A. (2021). Refined Radiocarbon Chronologies for Northern Iroquoian Site Sequences: Implications for Coalescence, Conflict, and the Reception of European Goods. *American Antiquity*, *86*(1), 61–89.

Canadian Heritage Rivers Board and Technical Planning Committee. (n.d.). *The Rivers – Canadian Heritage Rivers System Canada's National River Conservation Program*. Canadian Heritage Rivers System. http://chrs.ca/en/rivers/

Carman, R. A., Buehler, D., Mikesell, S., & Searls, C. L. (2012). *Current Practices to Address Construction Vibration and Potential Effects to Historic Buildings Adjacent to Transportation Projects*. Wilson, Ihrig and Associates, ICF International, and Simpson, Gumpertz and Heger, Incorporated for the American Association of State Highway and Transportation Officials (AASHTO).

Chapman, L. J., & Putnam, F. (1984). *The Physiography of Southern Ontario* (3rd ed., Vol. 2). Ontario Ministry of Natural Resources.

County of Peterborough. (1994). *County of Peterborough Official Plan, consolidated March 2020*.

Crispino, M., & D'Apuzzo, M. (2001). Measurement and Prediction of Traffic-induced Vibrations in a Heritage Building. *Journal of Sound and Vibration*, *246*(2), 319–335.

Crown-Indigenous Relations and Northern Affairs. (2013). *Upper Canada Land Surrenders and the Williams Treaties (1781-1862/1923)*. https://www.rcaanc-cirnac.gc.ca/eng/1360941656761/1360941689121

Crown-Indigenous Relations and Northern Affairs. (2016). *Rice Lake Treaty, No. 20*. Treaty Texts – Upper Canada Land Surrenders. https://www.rcaanc-cirnac.gc.ca/eng/1370372152585/1370372222012#ucls18

Department of Energy, Mines and Resources. (1972). *Millbrook Sheet 31D/1e* [Map].

Department of Energy, Mines and Resources. (1985). *Rice Lake Sheet 31D/1* [Map].

Department of National Defence. (1932). *Rice Lake Sheet 31D/1* [Map].

Dodd, C. F., Poulton, D. R., Lennox, P. A., Smith, D. G., & Warrick, G. A. (1990). The Middle Ontario Iroquoian Stage. In C. J. Ellis & N. Ferris (Eds.), *The Archaeology of Southern Ontario to A.D. 1650* (pp. 321–360). Ontario Archaeological Society Inc.

Ellis, C. J., & Deller, D. B. (1990). Paleo-Indians. In C. J. Ellis & N. Ferris (Eds.), *The Archaeology of Southern Ontario to A.D. 1650* (pp. 37–64). Ontario Archaeological Society Inc.

Ellis, C. J., Timmins, P. A., & Martelle, H. (2009). At the Crossroads and Periphery: The Archaic Archaeological Record of Southern Ontario. In T. D. Emerson, D. L. McElrath, & A. C. Fortier (Eds.), *Archaic Societies: Diversity and Complexity across the Midcontinent.* (pp. 787–837). State University of New York Press.

Ellis, P. (1987). Effects of Traffic Vibration on Historic Buildings. *The Science of the Total Environment*, *59*, 37–45.

Ferris, N. (2013). Place, Space, and Dwelling in the Late Woodland. In M. K. Munson & S. M. Jamieson (Eds.), *Before Ontario: The Archaeology of a Province* (pp. 99–111). McGill-Queen's University Press. http://www.jstor.org/stable/j.ctt32b7n5.15

Hunting Survey Corporation Limited. (1954). *1954 Air Photos of Southern Ontario*. https://mdl.library.utoronto.ca/collections/air-photos/1954-air-photos-southern-ontario/index

Mika, N., & Mika, H. (1977). *Places In Ontario: Their Name Origins and History, Part I, A-E: Vol. I* (https://archive.org/details/placesinontariot0001mika). Mika Publishing Company; Internet Archive.

Mika, N., & Mika, H. (1981). *Places In Ontario: Their Name Origins and History, Part II, F-M* (https://archive.org/details/placesinontariot0002mika; Vol. 2). Mika Publishing Company; Internet Archive.

Ontario Heritage Act, R.S.O. c. O.18, 1990 [as amended in 2021], (1990).

Ministry of Culture. (2006). *Ontario Heritage Tool Kit*.

Ministry of Culture and Communications, & Ministry of the Environment. (1992). *Guideline for Preparing the Cultural Heritage Resource Component of Environmental Assessments*.

Planning Act, R.S.O. 1990, c. P.13, (1990).

Ministry of Municipal Affairs and Housing. (2017). *Oak Ridges Moraine Conservation Plan*. https://files.ontario.ca/oak-ridges-moraine-conservation-plan-2017.pdf

Ministry of Municipal Affairs and Housing. (2020). *Provincial Policy Statement, 2020, Under the Planning Act*. Queen's Printer for Ontario.

Environmental Assessment Act, R.S.O. c. E.18, (1990).

Ministry of Tourism, Culture and Sport. (2016). *Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes, A Checklist for the Non-Specialist*. http://www.mtc.gov.on.ca/en/heritage/tools.shtml

Ministry of Tourism Culture and Sport, M. T. C. S. (2006a). *Heritage Resources in the Land Use Planning Process: Info Sheet #5, Heritage Impact Assessments and Conservation Plans*. http://www.mtc.gov.on.ca/en/publications/Heritage_Tool_Kit_Heritage_PPS_infoSheet.pdf

Ministry of Tourism Culture and Sport, M. T. C. S. (2006b). *InfoSheet #5: Heritage Impact Assessments and Conservation Plans*.

Ministry of Tourism Culture and Sport, M. T. C. S. (2010). *Standards and Guidelines for Conservation of Provincial Heritage Properties: Standards & Guidelines*.

Municipal Restructuring Activity Summary Table. (2018). http://www.mah.gov.on.ca/AssetFactory.aspx?did=19769

Ontario Genealogical Society. (n.d.). *OGS Cemeteries*. Digitals Collections & Library Catalogue. http://vitacollections.ca/ogscollections/2818487/data

Ontario Heritage Trust. (2018). *An Inventory of Provincial Plaques Across Ontario*. https://www.heritagetrust.on.ca/user_assets/documents/Inventory-of-provincial-plaques-ENG.pdf

Ontario Heritage Trust. (n.d.a). *Easement Properties*. Ontario Heritage Trust. https://www.heritagetrust.on.ca/en/property-types/easement-properties

Ontario Heritage Trust. (n.d.b). *Ontario Heritage Act Register*. https://www.heritagetrust.on.ca/en/pages/tools/ontario-heritage-act-register

Ontario Heritage Trust. (n.d.c). *Places of Worship Inventory*. Ontario Heritage Trust. https://www.heritagetrust.on.ca/en/places-of-worship/places-of-worship-database

Parks Canada. (n.d.a). *Canada's Historic Places*. www.historicplaces.ca

Parks Canada. (n.d.b). *Directory of Federal Heritage Designations*. https://www.pc.gc.ca/apps/dfhd/search-recherche_eng.aspx

Peterborough County. (n.d.). *Peterborough County—Public GIS*. https://ptbocounty.geocortex.com/Html5Viewer/Index.html?viewer=PeterboroughPublic

Rainer, J. H. (1982). Effect of Vibrations on Historic Buildings. *The Association for Preservation Technology Bulletin*, *XIV*(1), 2–10.

Randl, C. (2001). *Preservation Tech Notes: Protecting a Historic Structure during Adjacent Construction*. U.S. Department of the Interior National Park Service. https://www.nps.gov/tps/how-to-preserve/tech-notes/Tech-Notes-Protection03.pdf

Toronto Railway Historical Association. (2020). *Midland Railway of Canada*. https://www.trha.ca/trha/history/railways/midland-railway-of-canada/

Township of Cavan Monaghan. (2015). *Official Plan for Township of Cavan Monaghan*.

Township of Cavan Monaghan, & EcoVue Consulting Services Inc. (2011). *The Cultural Resource Mapping Project*.

Tremaine, G. C. (1861). *Tremaine's Map of the County of Durham, Upper Canada* [Map]. George C. Tremaine.

U.N.E.S.C.O. World Heritage Centre. (n.d.). *World Heritage List*. U.N.E.S.C.O. World Heritage Centre. http://whc.unesco.org/en/list/

Williams Treaties First Nations. (2017). *About Williams Treaties First Nations*. http://www.williamstreatiesfirstnations.ca/about/

Williamson, R. F. (1990). The Early Iroquoian Period of Southern Ontario. In C. J. Ellis & N. Ferris (Eds.), *The Archaeology of Southern Ontario to A.D. 1650* (pp. 291–320). Ontario Archaeological Society Inc.

Wiss, J. F. (1981). Construction Vibrations; State-of-the-Art. *Journal of Geotechnical Engineering*, *107*, 167–181.

APPENDIX 6

COMMUNICATION RECORDS & CONSULTATION



APPENDIX 6-1

Contact Lists

Contact Lists

~

Agencies, Organizations & Public Members

DATE MODIFIED	MODIFICATION TYPE	FIRST NAME	LAST NAME	TITLE	COMPANY NAME/ADDITIONAL NAME	LOCATION	CITY/TOWN	PROVINCE	PCODE	TEL	FAX	EMAIL
Original list	N/A	Bill	Balfour	Fire Chief	Township of Cavan Monaghan	988 COUNTY ROAD 10	Millbrook	ON	L0A 1G0	705-932-9342		bbalbour@cavanmonaghan.net
Original list	N/A	Tim	Belch	Councillor	Township of Cavan Monaghan	988 COUNTY ROAD 10	Millbrook	ON	L0A 1G0	705-932-2929	705-932-3458	tbelch@cavanmonaghan.net
Original list	N/A	John	Connelly	Executive Director of Planning & Development	Township of Cavan Monaghan	988 COUNTY ROAD 10	Millbrook	ON	L0A 1G0			jconnolly@cavanmonaghan.net
Original list	N/A	Christina	Coulter	Planning & Development	Township of Cavan Monaghan	988 COUNTY ROAD 10	Millbrook	ON	L0A 1G0			ccoulter@cavanmonaghan.net
Original list	N/A	Maria	David	Administrator Fire Services	Township of Cavan Monaghan	988 COUNTY ROAD 10	Millbrook	ON	L0A 1G0	705-832-9337		fireadmin@cavanmonaghan.net
Original list	N/A	Karen	Ellis	Planning & Development	Township of Cavan Monaghan	988 COUNTY ROAD 10	Millbrook	ON	L0A 1G0			kellis@cavanmonaghan.net
Original list	N/A	Matthew	Graham	Deputy Mayor	Township of Cavan Monaghan	988 COUNTY ROAD 10	Millbrook	ON	L0A 1G0	705-932-2929	705-932-3458	mgraham@cavanmonaghan.net
Original list	N/A	Evan	Grieger	Project Engineer & Operations Supervisor	Township of Cavan Monaghan	988 COUNTY ROAD 10	Millbrook	ON	L0A 1G0		705-932-3458	egrieger@cavanmonaghan.net
Original list	N/A	Wayne	Hancock	Director of Public Works	Township of Cavan Monaghan	988 COUNTY ROAD 10	Millbrook	ON	L0A 1G0	705-932-9327	705-932-3458	whancock@cavanmonaghan.net
Original list	N/A	Ryan	Huntley	Councillor	Township of Cavan Monaghan	988 COUNTY ROAD 10	Millbrook	ON	L0A 1G0	705-932-2929	705-932-3458	rhuntley@cavanmonaghan.net
Original list	N/A	Yvette	Hurley	Chief Administrative Officer	Township of Cavan Monaghan	988 COUNTY ROAD 10	Millbrook	ON	L0A 1G0	705-932-9328	705-932-3458	yhurley@cavanmonaghan.net
Original list	N/A	Scott	McFadden	Mayor	Township of Cavan Monaghan	988 COUNTY ROAD 10	Millbrook	ON	L0A 1G0	705-932-2929	705-932-3458	mayor@cavanmonaghan.net
Original list	N/A	Cathy	Moore	Councillor	Township of Cavan Monaghan	988 COUNTY ROAD 10	Millbrook	ON	L0A 1G0	705-932-2929	705-932-3458	cmoore@cavanmonaghan.net
Original list	N/A	Kyle	Phillips	Chief Building Official	Township of Cavan Monaghan	988 COUNTY ROAD 10	Millbrook	ON	L0A 1G0	705-932-9319	705-932-3458	kphillips@cavanmonaghan.net
Original list	N/A	General Contact		Community Policing	Township of Cavan Monaghan	1 Dufferin Street P.O. Box 8	Millbrook	ON	L0A 1G0	705-761-6899		cmcpolice1@gmail.com
Original list	N/A	Chairman		Community Policing	Township of Cavan Monaghan	1 Dufferin Street P.O. Box 8	Millbrook	ON	L0A 1G0	705-761-6899		cmcpolice@nexicom.net
2023-06-20	Added to list	Graham	Whitelaw		BCWA							graham.whitelaw@gmail.com
2023-06-20	Added to list	Craig	Onafrychuk		BCWA							conafrychuk@hotmail.com
2023-11-01	Added to list	Chris	Grayson	Chair	BCWA					226-558-1519		cgrayson@nexicom.net
Original list	N/A			Centennial Place AON Long Term Care	Centennial Place	2 Centennial Lane N.	Millbrook	ON	L0A 1G0	7059324464	7059324473	cpadm@aoninc.com
Original list	N/A	Class Environmental Coordinator			Crown-Indigenous Relations and Northern Affairs Canada and Indigenous Services Canada					1-800-567-9604		aadnc.infopubs.aandc@canada.ca
Original list	N/A				Enbridge						1-866-763-5427	webmaster-corp@enbridge.com
Original list	N/A	General Contact			Environment Canada	200 Sacré-Coeur Blvd	Gatineau	QC	K1A 0H3	819-938-3860		ec.enviroinfo.ec@canada.ca
Original list	N/A	Class Environmental Coordinator			Hydro One Networks Inc.	P.O. Box 5700	Markham	ON	L3R 1C8		9059443251	CustomerRelations@HydroOne.com
Original list	N/A	Secondary Land Use			Hydro One Networks Inc.	483 Bay Street	Toronto	ON				SecondaryLandUse@HydroOne.com
Original list	N/A	Adam	Carr	Vice President, Sales, Easements & Acquisitions	Infrastructure Ontario	1 Dundas Street West, Suite 2000	Toronto	ON	M5G 2L5	(647) 952-3657		Adam.Carr@infrastructureontario.ca
Original list	N/A	Joanna	Brown	Environmental Specialist	Infrastructure Ontario					343-302-7392		joanna.brown@infrastructureontario.ca
Original list	N/A	Frances	Hallen		Infrastructure Ontario							Frances.Hallen@infrastructureontario.ca
2023-06-20	Added to list	Cory	Ostrowka		Infrastructure Ontario							Cory.Ostrowka@infrastructureontario.ca
Original list	N/A	Jennifer	Leclerc	Director of Education	Kawartha Pine Ridge District School Board	1994 Fisher Drive	Peterborough	ON	K9J 6X6	705-742-9773 x 2005	705-742-7801	Director_Education@kprdsb.ca
Original list	N/A	Linda	Burton	Executive Liason to the Trustees	Kawartha Pine Ridge District School Board	1994 Fisher Drive	Peterborough	ON	K9J 6X6	705-742-9773 x 2006	705-742-7801	Linda_Burton@kprdsb.ca
Original list	N/A	Stacey	Foss	Executive Assistant	Kawartha Pine Ridge District School Board	1994 Fisher Drive	Peterborough	ON	K9J 6X6	705-742-9773 x 2024	705-742-7801	stacey_foss@kprdsb.ca
Original list	N/A	Joe	Newbery	Manager, Construction and Engineering Services	Kawartha Pine Ridge District School Board	1994 Fisher Dr	Peterborough	ON	K9J 7A1	705-933-9736		joseph_newbery@kprdsb.ca
Original list	N/A	Sophia	Wouters	Capital Projects Supervisor, Construction and Engineering Services	Kawartha Pine Ridge District School Board	1994 Fisher Dr	Peterborough	ON	K9J 7A1	705-740-5149		sophia_wouters@kprdsb.ca
Original list	N/A	Kim	Bos	Secretary	Millbrook & District Chamber of Commerce					705-868-1720		bosb001@nexicom.net
Original list	N/A	Christine	McCullough	Chair, Business Improvement Area (BIA)	Millbrook BIA							chair@millbrookbia.com
Original list	N/A	Jeffery	White	Principal	Millbrook South Cavan Public School	47 Tupper Street	Millbrook	ON	L0A 1G0	7059322789	705-932-9013	jeffery_white@kprdsb.ca
2023-06-20	Added to list	Jayne	Patterson	Vice Principal	Millbrook South Cavan Public School							jayne_patterson@kprdsb.ca
2023-06-20	Added to list			General Contact	Ministry of Agriculture, Food & Rural Affairs							omafra.eanotices@ontario.ca
2023-06-20	Added to list	Karla	Barboza	Team Lead - Heritage	Ministry of Citizenship and Multiculturalism							karla.barboza@ontario.ca
2023-06-20	Added to list	Dan	Minkin	Heritage Planner	Ministry of Citizenship and Multiculturalism							dan.minkin@ontario.ca

Original list	N/A	Laura	Hatcher	Heritage Planner	Ministry of Heritage, Sport, Tourism and Culture Industries	401 Bay Street	Toronto	ON	M7A 0A7	437-239-3404		laura.e.hatcher@ontario.ca
Original list	N/A	Izalino	Coelho	Administrative Coordinator	Ministry of Indigenous Affairs	160 Bloor St. E., 4th Floor	Toronto	ON	M7A 2E6	416-326-4743		izalino.coelho@ontario.ca
Original list	N/A	Erick	Boyd	Manager, Community Planning and Development	Ministry of Municipal Affairs & Housing	659 Exeter Road, 2nd Floor	London	ON	N6E 1L3	519-873-4025	519-873-4018	erick.boyd@ontario.ca
Original list	N/A	Catherine	Warren	District Planner	Ministry of Natural Resources and Forestry	1st Flr S, 300 Water St	Peterborough	ON	K9J 3C7	705-772-9012		catherine.warren@ontario.ca
Original list	N/A	Tamara	Dolan	Lands & Water Technical Specialist	Ministry of Natural Resources and Forestry	1st Flr S, 300 Water St	Peterborough	ON	K9J 3C7			tamara.dolan@ontario.ca
Original list	N/A	Hal	Leadlay	District Manager (Acting)	Ministry of Natural Resources and Forestry	1st Flr S, 300 Water St	Peterborough	ON	K9J 3C7	705-755-3363		hal.leadlay@ontario.ca
Original list	N/A	Margaret	Bérubé	Management Biologist	Ministry of Natural Resources and Forestry	1st Flr S, 300 Water St	Peterborough	ON	K9J 3C7	705-772-9824		margaret.berube@ontario.ca
2023-06-20	Added to list	Gillian	Hartman		Ministry of Natural Resources and Forestry							gillian.hartman@ontario.ca
Original list	N/A	Class Environmental Assessment Contact			Ministry of the Environment, Conservation and Parks							eanotification.eregion@ontario.ca
Original list	N/A			MEA Notices	Ministry of the Environment, Conservation and Parks							MEANoticesEAAB@ontario.ca
Original list	N/A	Jon	Orpana	MECP EA Coordinator	Ministry of the Environment, Conservation and Parks	1259 Gardiners Road	Kingston	ON	K7M 8S5			jon.orpana@ontario.ca
2023-06-20	Added to list			General Contact	Ministry of Transportation							Website: https://www.ontario.ca/feedback/contact-us?id=26938&nid=97174
Original list	N/A	Laurie	Scott	MPP Haliburton-Kawartha Lakes-Brock	MPP	14 Lindsay Street North	Lindsay	ON	K9V 1T4	705-324-6654	705-324-6938	laurie.scottco@pc.ola.org
Original list	N/A	Greg	Conlin	Plant/Facility Manager	Nexicom Inc		Millbrook	ON		705-932-4142		gconlin@nexicomgroup.net
Original list	N/A	Meredith	Carter	Manager, Watershed Management	Otonabee Conservation	250 Milroy Drive	Peterborough	ON	K9H 7M9	705-745-5791x - 223	705-745-7488	mcarter@otonabeeconservation.com
Original list	N/A	Gordon	Earle	Water Resource Technologist	Otonabee Conservation	250 Milroy Drive	Peterborough	ON	K9H 7M9	705-745-5791x- 214	705-745-7488	gearle@otonabeeconservation.com
Original list	N/A	Don	Allin	Planning & Development Officer	Otonabee Conservation	250 Milroy Drive	Peterborough	ON	K9H 7M9	705-745-5791x- 225	705-745-7488	dallin@otonabeeconservation.com
2023-06-20	Added to list			General Contact	Otonabee Conservation							otonabeeca@otonabeeconservation.com
Original list	N/A	Class Environmental Assessment Contact			Transport Canada	4900 Yonge St	Toronto	ON	M2N 6A5	416-952-0514		EnviroOnt@tc.gc.ca
2023-06-20	Added to list	Hayley	Middleton		Veltri Group	68 King St East	Bowmanville	ON	L1C 3X2			construction@veltrigroup.com
2023-06-20	Added to list	Frank	Veltri		Veltri Group	68 King St East	Bowmanville	ON	L1C 3X2			rentals@veltrigroup.com
2023-11-01	Added to list	Barbara	Heidenreich		Public Stakeholder					705-939-6831		bh@fernhill.com
2023-11-01	Added to list	Noel	Kerin		Public Stakeholder					416-618-7716		
2023-11-01	Added to list	Al	Steel		Public Stakeholder					705-944-5411		alsteel@nexicom.net
2023-06-20	Added to list	Marion	Thompson		Public Stakeholder							deererun@nexicom.net
2023-06-09	Added to list	Jane	Zednik		Public Stakeholder							hstoosh@peterboro.net

Contact Lists

~

Indigenous Contacts

DATE MODIFIED	MODIFICATION TYPE	FIRST NAME	LAST NAME	TITLE	COMPANY NAME/ADDITIONAL NAME	LOCATION	CITY/TOWN	PROVINCE	PCODE	TEL	FAX	EMAIL
Original list	N/A	Jason	Marsden	Councillor	Alderville First Nation	11696 Second Line, P.O. Box 46, Rr#4	Alderville	ON	K0K 2X0	905-352-2011		jmarsden@alderville.ca also cc inquiries@williamstreatiesfirstnations.ca
Original list	N/A	Rachel	Crowe	Receptionist	Alderville First Nation	11696 Second Line, P.O. Box 46, Rr#4	Alderville	ON	K0K 2X0	905-352-2011		afnreception@alderville.ca also cc inquiries@williamstreatiesfirstnations.ca
Original list	N/A	Carrie	Wilson	Executive Assistant to Council	Alderville First Nation	11696 Second Line, P.O. Box 46, Rr#4	Alderville	ON	K0K 2X0	905-352-2011		cwilson@alderville.ca also cc inquiries@williamstreatiesfirstnations.ca
Original list	N/A	Joanne	Smoke	First Nation Administrator	Alderville First Nation	11696 Second Line, P.O. Box 46, Rr#4	Alderville	ON	K0K 2X0	905-352-2011		jsmoke@alderville.ca also cc inquiries@williamstreatiesfirstnations.ca
2023-12-21	Added to list	Taynar	Simpson	Chief	Alderville First Nation	11696 Second Line, P.O. Box 46, Rr#4	Alderville	ON	K0K 2X0	905-352-2011		tsimpson@alderville.ca also cc inquiries@williamstreatiesfirstnations.ca
2023-12-21	Added to list	Lisa	McDonald	Councillor	Alderville First Nation	11696 Second Line, P.O. Box 46, Rr#4	Alderville	ON	K0K 2X0	905-352-2011		thundercloudkwe@alderville.ca also cc inquiries@williamstreatiesfirstnations.ca
2023-12-21	Added to list	Dawn Marie	Kelly	Councillor	Alderville First Nation	11696 Second Line, P.O. Box 46, Rr#4	Alderville	ON	K0K 2X0	905-352-2011		dawn.marie@alderville.ca also cc inquiries@williamstreatiesfirstnations.ca
2023-12-21	Added to list	Nora	Sawyer	Councillor	Alderville First Nation	11696 Second Line, P.O. Box 46, Rr#4	Alderville	ON	K0K 2X0	905-352-2011		nsawyer@alderville.ca also cc inquiries@williamstreatiesfirstnations.ca
Original list	N/A			Contact Us	Curve Lake First Nation							https://curvelakefirstnation.ca/contact/
Original list	N/A	Delaney	J		Curve Lake First Nation	22 Winookeeda Road	Curve Lake	ON	K0L 1R0	705-657-8045		delaneyj@curvelake.ca also cc inquiries@williamstreatiesfirstnations.ca
2023-12-14	Added to list	Karry	Sandy-McKenzie	Williams Treaties Claims Coordinator	Curve Lake First Nation	22 Winookeeda Road	Curve Lake	ON	K0L 1R0	705-657-8045		k.a.sandy-mckenzie@rogers.com
2023-12-21	Added to list	Dr. Julie	Kapyrka	Resource Consultation	Curve Lake First Nation	22 Winookeeda Road	Curve Lake	ON	K0L 1R0	705-657-8045		JULIEK@CURVELAKE.CA
2023-12-21	Added to list	Kaitlin	Hill	Resource Consultation	Curve Lake First Nation	22 Winookeeda Road	Curve Lake	ON	K0L 1R0	705-657-8045		KAITLINH@CURVELAKE.CA
Original list	N/A	Laurie	Carr	Chief	Hiawatha First Nation	123 Paudash Street	HIAWATHA	ON	K9J 0E6	705-295-4421		chiefcarr@hiawathafn.ca also cc inquiries@williamstreatiesfirstnations.ca
Original list	N/A	Jeff	Loucks	Councillor (Lands, infrastructure)	Hiawatha First Nation	123 Paudash Street	HIAWATHA	ON	K9J 0E6	705-295-4421		jsloucks@bell.net also cc inquiries@williamstreatiesfirstnations.ca
Original list	N/A			General Contact	Hiawatha First Nation	123 Paudash Street	HIAWATHA	ON	K9J 0E6	705-295-4421		info@hiawathafn.ca also cc inquiries@williamstreatiesfirstnations.ca
Original list	N/A	Donna	Paudash	Main Reception	Hiawatha First Nation	123 Paudash Street	HIAWATHA	ON	K9J 0E6	705-295-4421		dpaudash@hiawathafn.ca also cc inquiries@williamstreatiesfirstnations.ca
2023-10-18	Added to list	Tom	Cowie	Lands/Resources Consultation	Hiawatha First Nation	123 Paudash Street	HIAWATHA	ON	K9J 0E6	705-295-4421		tcowie@hiawathafn.ca also cc inquiries@williamstreatiesfirstnations.ca
2023-11-01	Added to list	Sean	Davison		Hiawatha First Nation	123 Paudash Street	HIAWATHA	ON	K9J 0E6	705-295-4421		sdavison@hiawathafn.ca also cc inquiries@williamstreatiesfirstnations.ca
Original list	N/A	Kris	Nahrgang	Chief	Kawartha Nishnawbe First Nation	257 Big Cedar Lake Rd.	Big Cedar	ON	K0L 2H0	705-654-4661		info@spiritofthestone.ca
Original list	N/A				Kawartha Nishnawbe First Nation	257 Big Cedar Lake Rd.	Big Cedar	ON	K0L 2H0	705-654-4661		Fill out contact form at link: https://www.spiritofthestone.ca/contact/
2023-06-20	Added to list			General Contact	Metis Nation of Ontario							consultations@metisnation.org
Original list	N/A	Class Environmental Coordinator		Administration	Mississaugas of Scugog Island First Nation	Administration Building; 22521 Island Road	Port Perry	ON	L9L 1B6	905-985-3337	905-985-8828	info@scugogfirstnation.com also cc inquiries@williamstreatiesfirstnations.ca
Original list	N/A	Class Environmental Coordinator		Public Works	Mississaugas of Scugog Island First Nation	Public Works Building; 22602 Island Road	Port Perry	ON	L9L 1B6	905-985-5211	289-274-2818	worksinfo@scugogfirstnation.com also cc inquiries@williamstreatiesfirstnations.ca
2023-12-21	Added to list	Consultation			Mississaugas of Scugog Island First Nation	Administration Building; 22521 Island Road	Port Perry	ON	L9L 1B6	905-985-3337		consultation@scugogfirstnation.com

APPENDIX 6-2

Notices of Project Commencement, PIC, and Completion

Water and Wastewater Master Servicing Plan
Notice of Commencement
Class Environmental Assessment

The Township of Cavan Monaghan is undertaking a Water and Wastewater Master Servicing Plan addressing Phases 1 and 2 of the Municipal Class Environmental Assessment (Class EA), June 2000, as amended in 2015. The Master Plan is intended to follow "Approach 1" of the Class EA, a process that will be done at a broad level of assessment to identify a conceptual plan for water and wastewater servicing in the Township. The project is intended to address Township improvement and growth opportunities, considering this in the context of the Township of Cavan Monaghan Official Plan.

Most of the existing Millbrook settlement area has municipal water and wastewater services while hamlets (including Cavan, Ida, Mount Pleasant, Springville, Fraserville and South Monaghan) are typically on private wells and septic systems. The master plan will consider and examine alternatives and viability to provide water and wastewater servicing to the entire Millbrook community. This includes expanding services to areas within the settlement boundary and possibly beyond, if financially worthwhile. It will identify the preferred drinking water supply, storage and distribution alternative and the preferred wastewater treatment and sanitary sewage collection alternative to prepare for the next 10 years and for long term vision.

Interested persons are encouraged to bring comments and concerns to the Township at any time during this process and to identify their interest in being added to the project mailing list. A Public Information Meeting will be held as part of the study at which Township staff and their consultants will be available to provide information and answer questions regarding the project. The public meeting is tentatively scheduled for Spring 2021.

If you have any questions or comments or require any information about the study or the Municipal Class Environment Assessment process, you are invited to contact the persons listed below:

Township of Cavan Monaghan
Public Works
Mr. Wayne Hancock, P.Eng.
Director of Public Works
988 County Road 10
Millbrook, Ontario, L0A 1G0
Tel: (705) 932-9327
Fax: (705) 932-3458
whancock@cavanmonaghan.net

R.V. Anderson Associates Limited
Ms. Rika Law, P.Eng., PMP
2001 Sheppard Avenue East,
Suite 300
Toronto, ON, M2J 4Z8
Tel: (416) 497-8600 ext. 1209
rlaw@rvanderson.com

This notice was first issued on November 2, 2020.

Township of Cavan Monaghan

Water and Wastewater Master Servicing Plan

Problem and Opportunity Statement

Background

The Township of Cavan Monaghan is committed to delivering responsive and cost-effective services to provide for the economic, social and environmental well-being of its ratepayers now and into the future. Millbrook is currently the only serviced urban settlement area within the Township, with water and sanitary infrastructure including a Wastewater Treatment Plant (WWTP), Water Treatment Plant (WTP) and Elevated Water Storage Tank. Un-serviced hamlet areas include Bailieboro, South Monaghan, Fraserville, Springville, Five Mile Turn, Mount Pleasant, Ida and Cavan. Hamlets are generally serviced by private wells and/or septic systems.

Problem and Opportunity

With the recent connection of Hwy 407 to Hwy 115, there is opportunity for Township improvements and growth in terms of employment, community services and residential living. As such, the Township of Cavan Monaghan is undertaking a Water and Wastewater Master Servicing Plan to develop a plan to identify key improvements to the existing water and wastewater infrastructure to service the current and future needs of the Township.

The focus of the study will be the analysis of the Millbrook urban settlement area, including future development within the existing urban area (in accordance with the Township of Cavan Monaghan Official Plan (Amended January 2018)), while accommodating the future vision of servicing beyond the settlement boundary.

While the proposed development poses significant challenges to the Township, Cavan Monaghan is committed to providing efficient and sustainable infrastructure while ensuring that any development within the community preserves or enhances the environment for the betterment of future generations.

Preferred solution(s) will be prioritized and implemented in phases to address immediate needs, intermediate goals and long-term growth, and shall generally:

- Comply with applicable regulations to provide adequate water and wastewater servicing
- Comply with the Official Plan (2018) while accommodating future vision of servicing beyond the settlement boundary
- Consider stakeholder comments and concerns
- Be financially viable
- Be technically feasible and operationally sustainable
- Be socially and environmentally responsible

Water and Wastewater Master Servicing Plan

Notice of Public Information Centre
Class Environmental Assessment

The Township of Cavan Monaghan is undertaking a Master Servicing Study (MSS) for Water and Wastewater under the framework of Master Plan Approach #1 within the Municipal Class Environmental Assessment (Class EA) Process, last amended in 2023.

This MSS will identify a high level, conceptual plan for water and wastewater servicing in the Township of Cavan Monaghan to address Township improvement and growth opportunities in the context of the Township of Cavan Monaghan Official Plan (last amended in 2021), and the Growth Management Strategy (GMS) completed in 2022 in support of the Municipal Comprehensive Review (MCR). Most of the existing Millbrook settlement area has municipal water and wastewater services while hamlets (including Cavan, Ida, Mount Pleasant, Springville, Fraserville and South Monaghan) are typically on private wells and septic systems. The MSS study area is focused on the Millbrook settlement area, in line with the Township's future growth planning.

The Township of Cavan Monaghan encourages the public to actively participate in this planning process and invites interested parties to attend an in-person Public Information Centre (PIC):

Date: Wednesday, June 21, 2023
Time: 4:00 p.m. to 6:00 p.m.
Location: Municipal Office 988 County Rd 10, Millbrook ON L0A 1G0

Information about the project, including PIC display materials, will also be made available on the Township website after June 21, 2023: www.cavanmonaghan.net

The PIC will provide an overview of the study, including the problem and opportunities to be addressed, existing conditions, alternative solutions and evaluation criteria considered to select the preferred drinking water supply, storage and distribution approach and the preferred wastewater treatment and sanitary collection approach to prepare for the forecasted growth over a 30-year planning horizon (2021 to 2051).

If you have any questions or comments, please contact the Project Team:

Township of Cavan Monaghan
Wayne Hancock, P.Eng.
988 County Road 10
Millbrook, Ontario, L0A 1G0
Tel: (705) 932-9327
Fax: (705) 932-3458
whancock@cavanmonaghan.net

R.V. Anderson Associates Limited
Dania Chehab, P.Eng., ENV SP
2001 Sheppard Avenue East, Unit 300
Toronto, ON, M2J 4Z8
Tel: (416) 497-8600 ext. 1456
dchehab@rvanderson.com

This notice was first issued on June 1, 2023

Water and Wastewater Master Servicing Plan
Notice of Completion
Class Environmental Assessment

The Township of Cavan Monaghan has completed a Water and Wastewater Master Servicing Study (MSS) under the framework of the Municipal Class Environmental Assessment (Class EA) Process, June 2000, as amended in 2023. This MSS followed "Approach 1", addressing Phase 1 and part of Phase 2 of the Class EA Process, to broadly identify a conceptual plan for water and wastewater servicing to 2051. The study considered and evaluated servicing alternatives and identified the preferred approach for water supply, water storage, wastewater treatment and wastewater conveyance. The preferred servicing approaches for these components are outlined in the table below along with any future studies that must be completed to fulfill Municipal Class EA requirements.

Infrastructure Component	Preferred Servicing Approach
Water Supply	**Increase the existing groundwater well supply through new supply wells or by increasing the draw from the existing well supply.** Additional study is required to confirm feasibility and suitability of this approach and a further Schedule B Class EA, or an Archaeological Screen Process (ASP) will be completed by the Township in the future, prior to construction.
Water Storage	**Increase water storage in Millbrook by adding an additional water storage facility in a new location.** To confirm the location, storage type and capacity of the future storage solution, a Schedule B Class EA will be completed by the Township in the future, prior to construction. **Increase the capacity of the existing Millbrook Booster Pumping Station (BPS) to service development growth near the existing standpipe.** This project is exempt from the Class EA process and can move forward immediately to the design/implementation phase.
Wastewater Treatment	**Increase wastewater treatment capacity in Millbrook by expanding the Millbrook Wastewater Treatment Plant (WWTP).** The Township will complete a future Schedule C Class EA to confirm feasibility, treatment technology, and footprint requirements for this expansion. An Assimilative Capacity Study (ACS) will also be completed to inform the future Schedule C Class EA and environmental approvals.
Wastewater Conveyance	**Convey wastewater from the North Catchment of Millbrook via the Tupper Street SPS to the East Sewer Shed of the Millbrook WWTP.** This project is exempt from the Class EA process and can move forward immediately to the design/implementation phase.

The planning and decision-making processes conducted through this study have been documented in the Master Servicing Study Report. The report is available for review on the Township of Cavan Monaghan website starting on March 1st, 2024, the start of the 30-Day Review Period.

https://www.cavanmonaghan.net/en/live-here/water-and-wastewater-master-servicing-plan.aspx

Interested persons are invited to provide comments and questions regarding the MSS by March 31st, 2024. Please submit comments and questions directly to members of the project team:

Township of Cavan Monaghan
Public Works
Mr. Wayne Hancock, P.Eng.
Director of Public Works
988 County Road 10
Millbrook, Ontario, L0A 1G0
Tel: (705) 932-9327
Fax: (705) 932-3458
whancock@cavanmonaghan.net

R.V. Anderson Associates Limited
Ms. Dania Chehab, P.Eng., ENV SP
2001 Sheppard Avenue East,
Suite 300
Toronto, ON, M2J 4Z8
Tel: (416) 497-8600 ext. 1456
dchehab@rvanderson.com

TOWNSHIP OF
CAVAN MONAGHAN
Have it all. Right here.

Water & Wastewater Master Servicing Study

Notice of Completion Class Environmental Assessment

The Township of Cavan Monaghan completed a Water and Wastewater Master Servicing Study (MSS) following the Municipal Class Environmental Assessment (Class EA) Process.

The study identified a conceptual plan for water and wastewater servicing up to 2051, evaluating alternatives and selecting preferred approaches for water supply, storage, treatment, and for wastewater treatment and conveyance. Additional future studies may be needed to meet Municipal Class EA requirements.



The report is available for review on the Township of Cavan Monaghan website:

www.cavanmonaghan.net/wwmsp

Please provide comments and questions on the MSS **by March 30, 2024**, directly to the project team members.

Wayne Hancock
Township of Cavan Monaghan
Director of Public Works
705-932-9327
whancock@cavanmonaghan.net

Dania Chehab
R.V. Anderson Associates Limited
P.Eng., ENV SP
416-497-8600 ext. 1456
dchehab@rvanderson.com

APPENDIX 6-3

PIC Materials

Public Information Centre

Cavan Monaghan Water and Wastewater Master Servicing Study

Township of Cavan Monaghan Municipal Office
988 County Rd 10, Millbrook Ontario L0A 1G0

Wednesday, June 21, 2023
Open House from 4:00 to 6:00 p.m.

Welcome!

The Township of Cavan Monaghan welcomes you to this Public Information Centre (PIC) so that we can share study objectives, findings to date, alternative solutions and next steps.

Please review the material and provide us with any comments you may have. Your input is important to the Class Environmental Assessment process. Staff are available to answer your questions and receive your comments. Comment sheets are also available for you to fill out.

Thank you for attending this Public Information Centre

Please sign in

TOWNSHIP OF CAVAN MONAGHAN

RVA

What is the purpose of this Public Information Centre?

To present an overview of the Cavan Monaghan Water and Wastewater Master Servicing Study (MSS).

To provide an overview of the:

- MSS and Municipal Class Environmental Assessment (Class EA) Process.
- Existing and forecasted populations & demands in the Study Area.

To present and gather your feedback on:

- Problem and Opportunity Statement
- List of alternatives
- Evaluation of alternatives
- Next steps in the process

TOWNSHIP OF CAVAN MONAGHAN

RVA

What is the purpose of this Master Servicing Study?

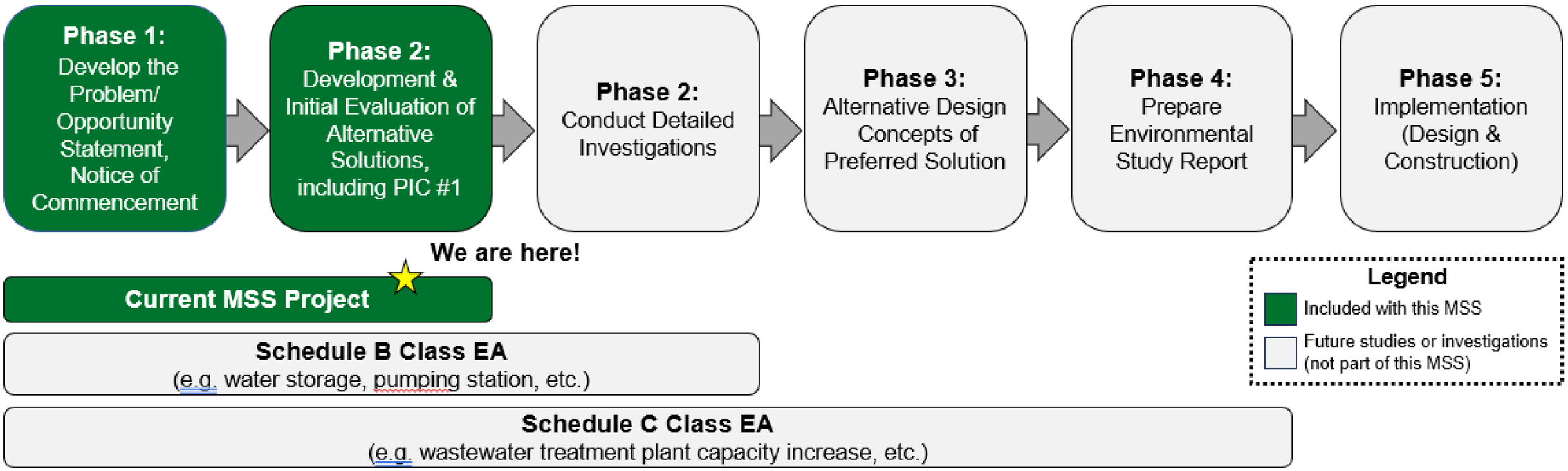
- The Township is undertaking a Master Servicing Study (MSS) under the Municipal Class Environmental Assessment (Class EA) framework, as approved under the Ontario Environmental Assessment Act.
- The MSS will follow Approach #1 (high level study) under the master planning framework of the Municipal Class EA process. Certain projects may require additional study in the future to comply with environmental assessment requirements.
- This study focuses on municipal services in the Millbrook Urban Area, in line with the Township's Growth Management Strategy (GMS).
- The objectives of the MSS are to:
    - Determine the water and wastewater infrastructure needs.
    - Develop immediate and long-term servicing strategies to meet those needs.

TOWNSHIP OF CAVAN MONAGHAN

RVA

Municipal Class EA Process

This Master Servicing Study (MSS) will complete **Phase 1** and a portion of **Phase 2** of the environmental assessment process. Any Schedule B or C projects resulting from this Master Servicing Study will require additional investigations or study to fulfill Class EA requirements. This includes completing any remaining Phase 2 requirements, such as detailed investigations, for Schedule B Projects and also completing Phases 3 and 4 for Schedule C Projects.

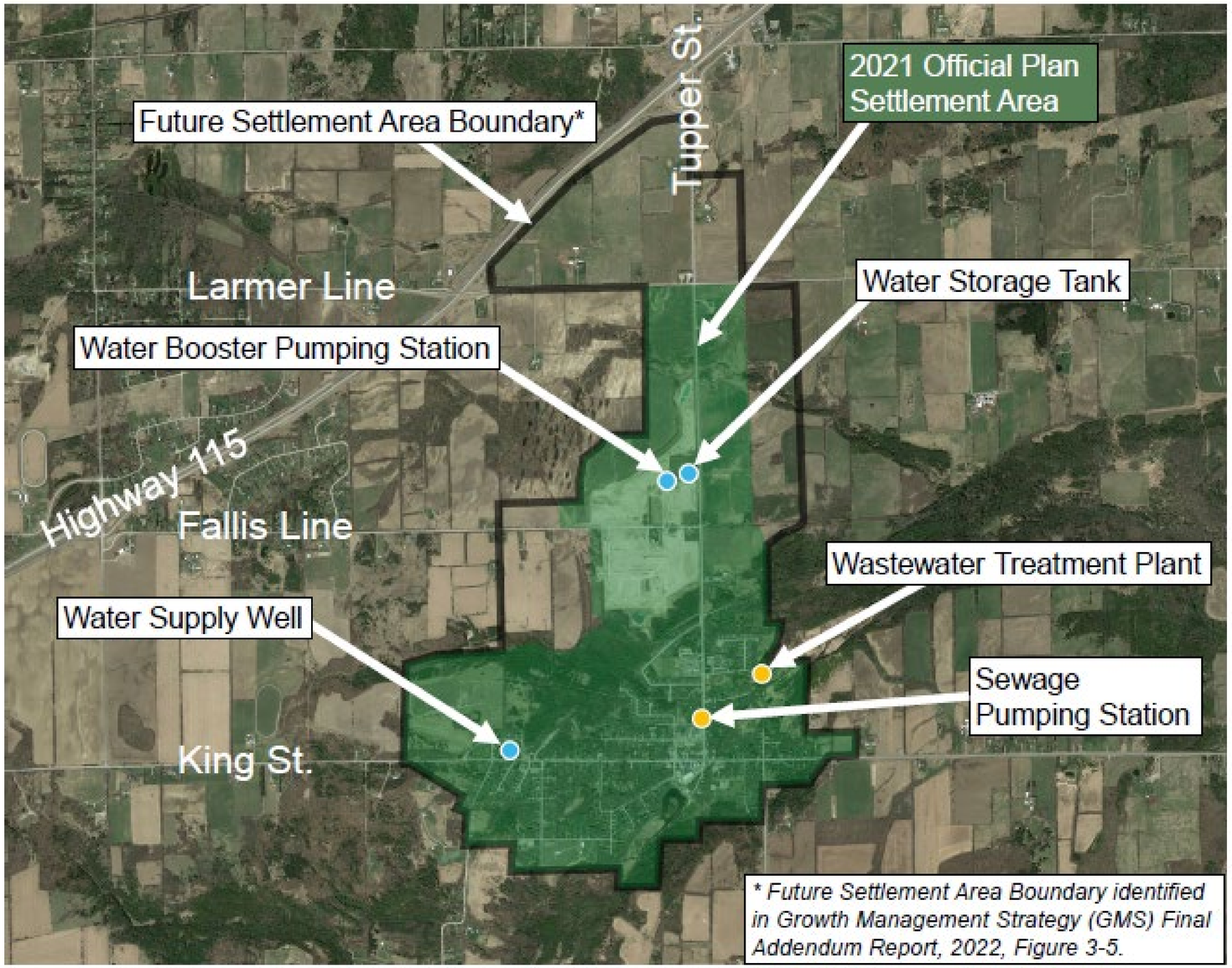


Upon completion of Phase 2 of the MSS, a report will be prepared to document the Municipal Class EA planning and decision-making process. It will be made available for a 30-day public review period and a Notice of Completion will be issued at that stage.

TOWNSHIP OF CAVAN MONAGHAN

RVA

Existing Infrastructure and Growth Projections



The Township of Cavan Monaghan completed a Growth Management Strategy (GMS) for the Millbrook Urban Area, identifying population and employment growth to 2051.

The GMS also identified the Future Settlement Area Boundary, which will be the Study Area Boundary for this MSS.

Millbrook Total Long-Term Population and Employment Estimates

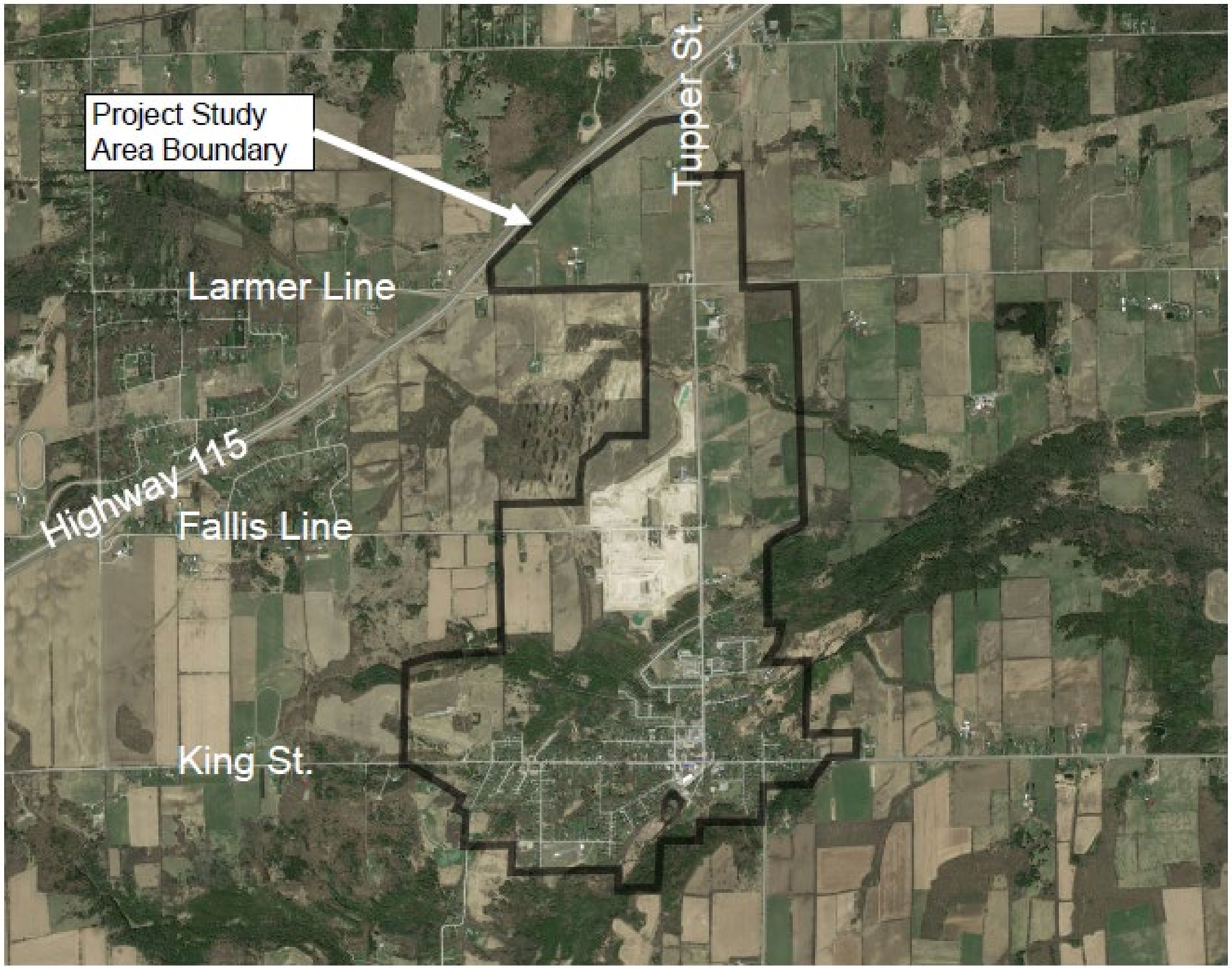
Year	Total Residential Population	Total Employees
2021	2,558	970
2051	10,455	3,983

Source: Growth Management Strategy (GMS) Final Addendum Report 2022

TOWNSHIP OF CAVAN MONAGHAN

RVA

Study Area & Problem and Opportunity Statement



The Township of Cavan Monaghan is preparing a Water and Wastewater Master Servicing Study to address future growth and improvements in the project study area.

The study will analyze existing infrastructure and determine how best to accommodate the future needs of the community. The Township is prioritizing solutions that comply with regulations and planning policies, while taking into consideration feedback from stakeholders.

Financial viability, technical feasibility and social and environmental responsibility will also be considered. The plan will be implemented to address immediate, intermediate and long-term goals.

TOWNSHIP OF CAVAN MONAGHAN

RVA

Approach to Development and Evaluation of Alternatives

Alternative solutions were developed for each of the system components listed below.

Water System:

Water Supply

Water Storage

Wastewater System:

Wastewater Treatment

For each system component, a long list of alternative solutions were first screened to establish a short list of reasonable and feasible alternatives.

The shortlisted alternatives were then evaluated in greater detail to identify the recommended solution.

Long List Screening Criteria

The long list of alternatives identified for each system component was screened against pass or fail criteria to confirm feasibility before proceeding to a detailed evaluation.

An alternative must pass all three (3) criteria to proceed to detailed evaluation.

Screening Criteria	Example Considerations
Does the Alternative Address the Problem and Opportunity Statement?	• Does the alternative address the considerations listed in the Problem and Opportunity Statement? • Does the alternative support planned growth to 2051? • Does the alternative meet local, regional, and provincial planning policies?
Is the Alternative Feasible and Reasonable?	• Is the alternative technically feasible and reasonable? • Can the alternative be constructed for a reasonable cost? • Does the alternative provide a long-term solution?
Can the alternative be implemented without significant impacts?	• Are the ecological, social, or other impacts anticipated to be unreasonably high relative to other alternatives?

TOWNSHIP OF CAVAN MONAGHAN

RVA

Evaluation Approach and Criteria

After screening the long list alternatives, the shortlisted alternatives for each system component was evaluated using the criteria and rating scale below.

Criteria	Example Considerations	Examples Continued
Social	• Ability to allow for future growth forecast under Township's GMS • Sensory impacts, such as noise, dust, etc. both during and after construction	• Effects on neighbouring properties • Effects on the municipality, local businesses, etc. • Effects on Indigenous communities
Technical	• Compatibility with existing systems • Ease of implementation • Effects on operations and maintenance	• Technical Complexity • Complies with regulatory/approval requirements
Cultural	• Effects on archaeological sites or structures	• Effects on cultural sites or structures
Environmental	• Effects on wildlife and vegetation, habitat • Effects on water, soil and air quality	• Climate Change
Cost	• Approximate magnitude of life cycle costs (capital cost, operation & maintenance cost)	• Sustainability and affordability • Financial risks

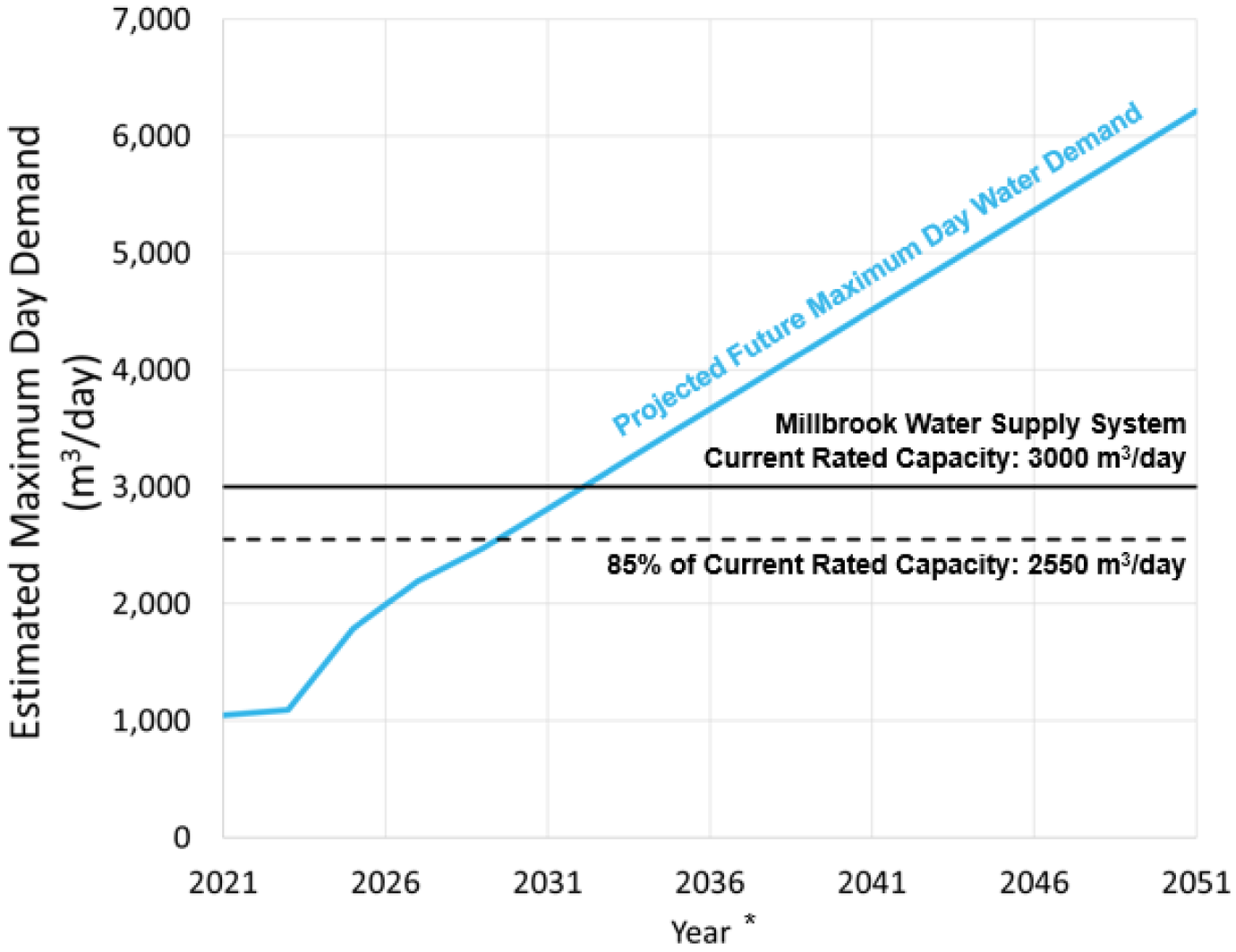
Least Positive/ Most Negative	More Negative Than Positive	Moderate	More Positive Than Negative	Most Positive/ Least Negative
				

TOWNSHIP OF CAVAN MONAGHAN

RVA

Water System: Water Supply

Current and Future Capacity Requirements



- The current Rated Capacity of the Millbrook water supply system is 3000 m^3/day.
- When planning for future infrastructure needs, it is important to start planning ahead of reaching 100% of capacity. In this case, planning and implementation of the expansion should occur when the demand reaches 85% of capacity.
- Based on future population, employment projections and anticipated rate of growth, the Millbrook water supply would reach 85% of its rated capacity by approximately 2029. By 2051, a capacity of approximately 6214 m^3/day would be required.
- **Therefore, additional water supply capacity would be required to service growth beyond 2031.**

* Actual timelines for water supply requirements will depend on rate of growth and demand

Water System: Water Supply

Long List of Alternatives and Screening

Alternatives	Does the alternative address the Problem & Opportunity Statement?	Is the alternative technical and economically feasible?	Can the alternative be implemented without significant impacts?	Summary
1 Do Nothing	✗	✗	✗	Carried forward to detailed evaluation as a baseline for comparison of all short-listed alternatives. Does not meet approved planning policies and would not be technically feasible in the long term.
2 Limit Growth	✗	✓	✗	Does not meet approved planning policies, therefore does not address the Problem and Opportunity Statement.
3 Increase Water Conservation	✗	✓	✓	Water conservation would reduce water demand but would not provide the required magnitude to support future growth. This would not be a standalone solution and can be incorporated with the preferred solution.
4 Expand Existing Groundwater Well Supply	✓	✓	✓	Alternatives 4 & 5 are feasible solutions that would address the Problem and Opportunity Statement. These alternatives will be evaluated in detail to identify a recommended solution.
5 Find Additional Groundwater Well Supply	✓	✓	✓	
6 Connect to External Water Supply System (e.g. City of Peterborough)	✓	✗	✗	Alternative 6 would address the Problem and Opportunity Statement but would have significant cost and other impacts to connect to the City of Peterborough water system over 20 km away. This is not feasible as it contradicts the City of Peterborough Official Plan.
7 Construct New Surface Water Treatment Plant	✓	✗	✗	Alternative 7 would address the Problem and Opportunity Statement but would have significant cost and other impacts to construct a new surface water treatment plant, including intake.

Water System: Water Supply

Short List and Detailed Evaluation Summary

Criteria	Alternative 1 Do Nothing		Alternative 4 Expand Existing Groundwater Well Supply		Alternative 5 Find Additional Groundwater Well Supply	
Social	• Would not support planned future growth and provincial mandate • Would not require property acquisition and would not impact surrounding land uses		• Would not require land acquisition • Potential impacts to nearby land uses due to adjustments to current well head protection area (WHPA) delineation • Moderate impacts to nearby neighbours during construction; shorter construction duration than Alt. 5		• Would require land acquisition • Potential impacts to nearby land uses due to well head protection area (WHPA) delineation • Moderate impacts to nearby neighbours during construction; longer construction duration than Alt. 4	
Technical	• Capacity would be constrained to 3000 m^3/d with no opportunity for supply redundancy		• Hydrogeological investigation required to confirm water quantity & quality, and to confirm if this alone would supply required future capacity. • More complex construction than Alt. 5 since existing facility must remain operational • May have space constraints compared to Alt. 5 • Provides opportunity for supply redundancy and increased security of supply		• Hydrogeological investigation required to confirm water quantity & quality, and to confirm if this alone would supply required future capacity • Less complex construction than Alt. 4 since new facility is independent • New property to consider spatial requirements and constraints • Provides opportunity for supply redundancy and increased security of supply	
Cultural	• No construction and therefore no impacts to cultural or archaeological resources		• Current facility property has been previously disturbed; therefore, would anticipate limited to no potential for retained archaeological or cultural resources		• Unknown archaeological and cultural conditions until specific site is selected; archeological and cultural investigation may be required	
Env.	• Would not require construction; therefore, no anticipated impacts		• Current facility property has been previously disturbed; therefore, would anticipate limited to no impacts to environmental resources • Investigation required to confirm viability and impacts on groundwater conditions		• Unknown environmental conditions until specific site is selected; environmental investigation may be required • Investigation required to confirm viability and impacts on groundwater conditions	
Cost	$$		$$$		$$$$	
Sum-mary	Not recommended due to non-compliance with Provincial Mandate		Recommended Alternative		Recommended Alternative	

Least Positive/ Most Negatives	More Negative Than Positive	Moderate	More Positive Than Negative	Most Positive/ Least Negative
				

Water System: Water Supply

Recommended Solution



Alternative 4 Expand Existing Groundwater Well Supply and / or Alternative 5 Find Additional Groundwater Well Supply

- Capacity expansion from 3000 m^3/day (existing) to 6214 m^3/day (year 2051), in a staged fashion to meet future growth

Next steps:

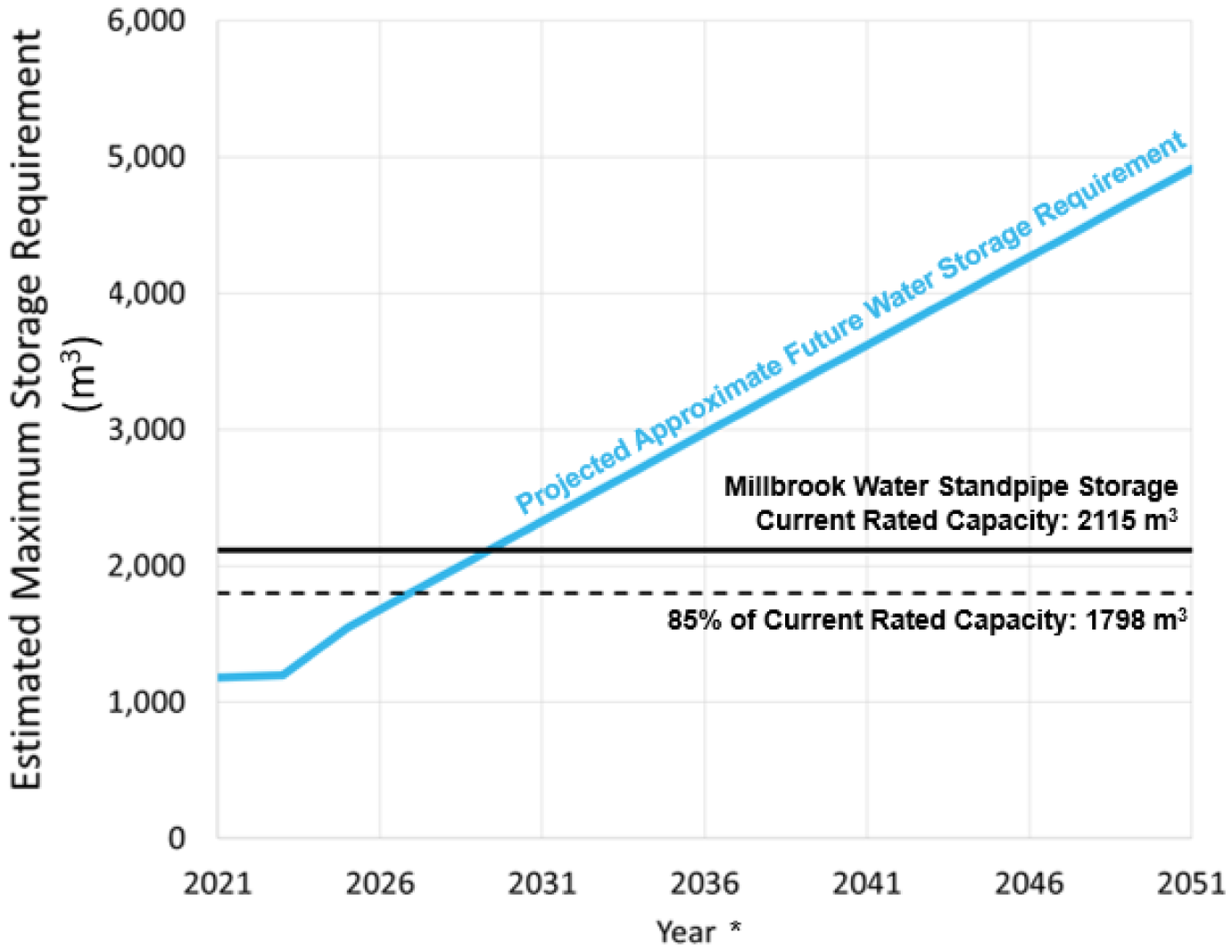
- Hydrogeological investigations required to confirm water quantity & quality, and to confirm ability to supply required future capacity.
- Additional investigation required in the future to confirm whether the project requires an Archaeological Screen Process (ASP) or a Schedule B Class EA.
- Future investigation would confirm approach, footprint requirements and preferred design concept.

TOWNSHIP OF CAVAN MONAGHAN

RVA

Water System: Water Storage

Current and Future Capacity Requirements



- The current Rated Capacity of the Millbrook water standpipe is 2115 m^3.
- When planning for future infrastructure needs, it is important to start planning ahead of reaching 100% of capacity. In this case, planning and implementation of the expansion should occur when the demand reaches 85% of capacity.
- Based on future population, employment projections and anticipated rate of growth, the Millbrook water storage tank would reach 85% of its rated capacity by approximately 2027. By 2051, a capacity of approximately 4912 m^3 would be required.
- **Therefore, additional water storage capacity would be required to service growth beyond 2029.**

* Actual timelines for water storage requirements will depend on rate of growth and demand

Water System: Water Storage

Long List of Alternatives and Screening

Alternatives	Does the alternative address the Problem & Opportunity Statement?	Is the alternative technical and economically feasible?	Can the alternative be implemented without significant impacts?	Summary
1 Do Nothing	✗	✗	✗	Carried forward to detailed evaluation as a baseline for comparison of all short-listed alternatives. Does not meet approved planning policies and would not be technically feasible in the long term.
2 Limit Growth	✗	✓	✗	Does not meet approved planning policies, therefore does not address the Problem and Opportunity Statement.
3 Increase Water Conservation	✗	✓	✓	Water conservation would reduce water demand but would not provide the required magnitude to support future growth. This would not be a standalone solution and can be incorporated with the preferred solution.
4 Add additional water storage at new location and retain existing standpipe	✓	✓	✓	Alternative 4 is feasible and would address the Problem and Opportunity Statement. This alternative will be evaluated in detail to identify a recommended solution.
5 Build new water reservoir at another site and decommission existing water storage tank.	✓	✗	✗	Alternative 5 would address the Problem and Opportunity Statement, but would have significant cost and other impacts. It would also not make good use of existing infrastructure investments, such as the existing standpipe.

Water System: Water Storage

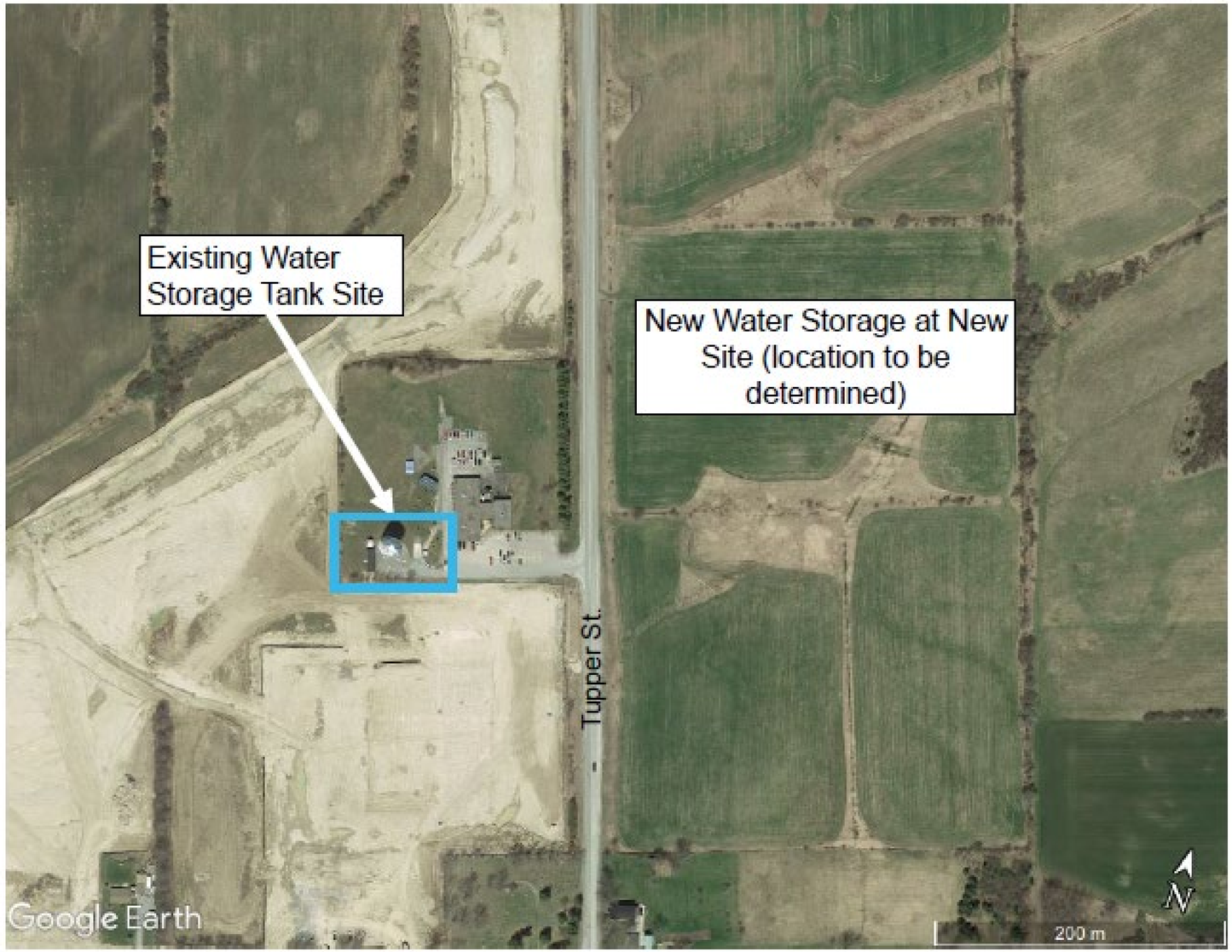
Short List and Detailed Evaluation Summary

Evaluation Criteria	Alternative 1 Do Nothing	Rating	Alternative 4 Add additional water storage at new location	Rating
Social	• Would not support planned future growth and provincial mandate • Would not require property acquisition and would not impact surrounding land uses		• Would require land acquisition • Aesthetic impacts to surrounding properties • Moderate impacts to nearby neighbours during construction	
Technical	• Capacity would be constrained to 2115 m^3/d		• Different water storage types may be evaluated (standpipe, elevated tank, at grade, buried, etc.) • Possible modifications to existing water supply and booster pumping station • New property to consider spatial requirements and constraints	
Cultural	• No construction and therefore no impacts to cultural or archaeological resources		• Unknown archaeological and cultural conditions until specific site is selected; archeological and cultural investigation may be required	
Environmental	• Would not require construction; therefore, no anticipated impacts		• Unknown environmental conditions until specific site is selected; environmental investigation may be required	
Cost	**$$**		**$$$**	
Summary	**Not recommended - due to non-compliance with Provincial Mandate**		**Recommended Alternative**	

Least Positive/ Most Negatives	More Negative Than Positive	Moderate	More Positive Than Negative	Most Positive/ Least Negative
				

Water System: Water Storage

Recommended Solution



Alternative 4 Add additional water storage at a new location

- Capacity expansion from 2115 m^3 (existing) to 4912 m^3 (year 2051).

Next Steps:

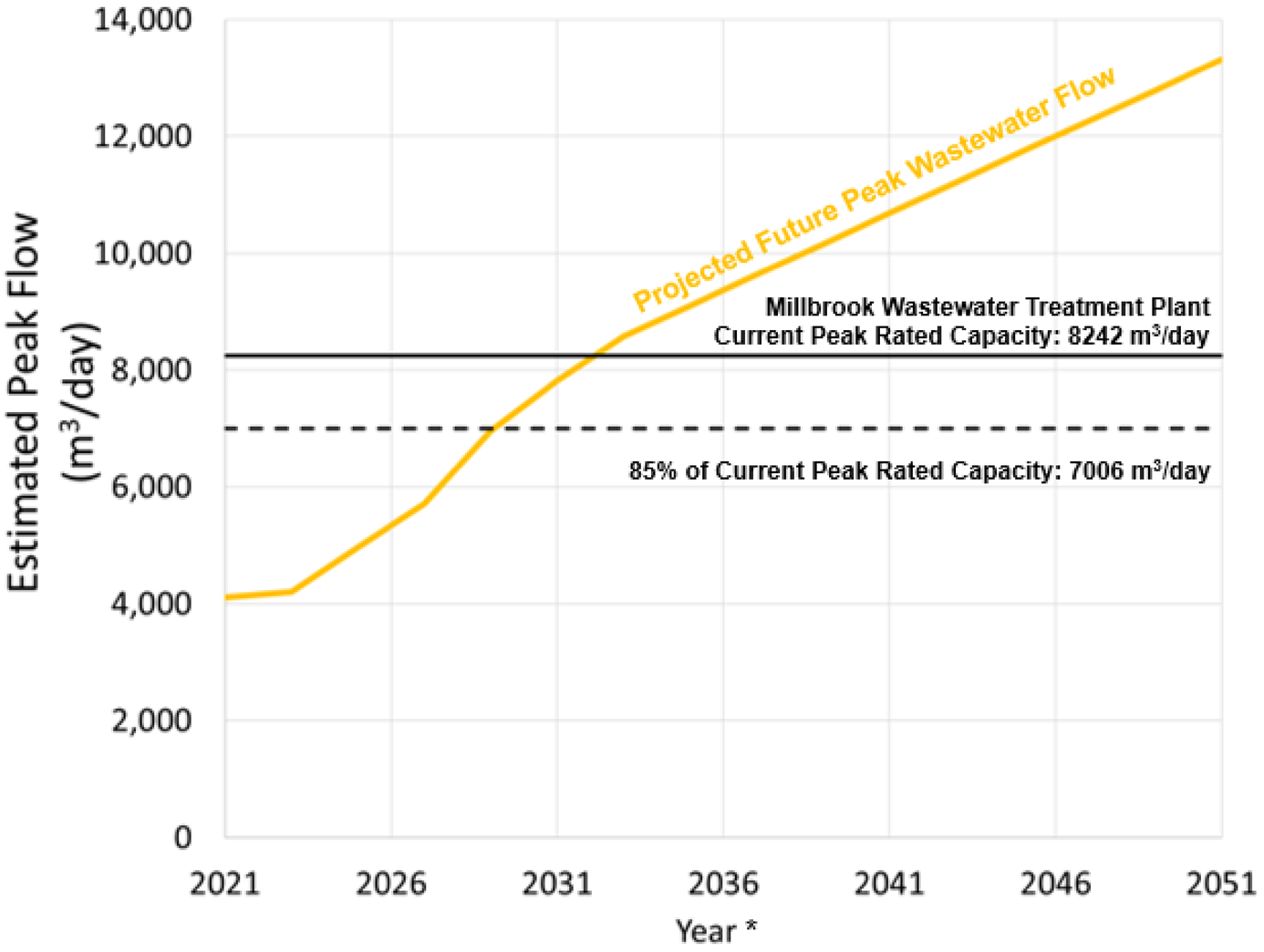
- Additional investigation (environmental, archaeological, cultural heritage) required in the future to fulfill a Schedule B Class EA process.
- Future Schedule B Class EA would confirm preferred solution including location, capacity and type of storage.

TOWNSHIP OF CAVAN MONAGHAN

RVA

Wastewater System: Wastewater Treatment

Current and Future Capacity Requirements



- The current peak flow Rated Capacity of the Millbrook wastewater treatment is 8242 m^3/day.
- When planning for future infrastructure needs, it is important to start planning ahead of reaching 100% of capacity. In this case, planning and implementation of the expansion should occur when the demand reaches 85% of capacity.
- Based on future population, employment projections and anticipated rate of growth, the Millbrook wastewater treatment plant would reach 85% of its rated capacity by approximately 2029. By 2051, a capacity of approximately 13316 m^3/day would be required.
- On an average day flow basis, additional wastewater treatment capacity is also required in the future.
- **Therefore, additional wastewater treatment capacity would be required to service growth beyond 2031.**

* Actual timelines for wastewater treatment requirements will depend on rate of growth and demand

Wastewater System: Wastewater Treatment

Long List of Alternatives and Screening

Alternatives	Does the alternative address the Problem & Opportunity Statement?	Is the alternative technical and economically feasible?	Can the alternative be implemented without significant impacts?	Summary
1 Do Nothing	✗	✗	✗	Carried forward to detailed evaluation as a baseline for comparison of all short-listed alternatives. Does not meet approved planning policies and would not be technically feasible in the long term.
2 Limit Growth	✗	✓	✗	Does not meet approved planning policies, therefore does not address the Problem and Opportunity Statement.
3 Reduce Inflow and Infiltration (I&I)	✗	✓	✓	I&I reduction alone would reduce wastewater flow but would not provide the required magnitude to support future growth. This would not be a standalone solution and can be incorporated with the preferred solution.
4 Expand Existing Wastewater Treatment Plant	✓	✓	✓	Alternative 4 is a feasible solution that would address the Problem and Opportunity Statement. This alternative will be evaluated in detail to identify a recommended solution.
5 Construct a Second Wastewater Treatment Plant	✓	Further investigation needed	Further investigation needed	Alternative 5 would address the Problem and Opportunity Statement but may have significant cost and other impacts. Further consideration/investigation is required.
6 Convey Wastewater to another system for treatment (e.g. City of Peterborough)	✓	✗	✗	Alternative 6 would address the Problem and Opportunity Statement but would have significant cost and other impacts to connect to the City of Peterborough system over 20 km away. This is not feasible as it contradicts the City of Peterborough Official Plan.
7 Construct new decentralized wastewater systems	✓	✗	✗	Alternative 7 would address the Problem and Opportunity Statement but would have significant cost and other impacts to construct new decentralized systems.

Wastewater System: Wastewater Treatment

Short List and Detailed Evaluation Summary

Criteria	Alternative 1 Do Nothing		Alternative 4 Expand Existing Wastewater Treatment Plant		Alternative 5 Construct a Second Wastewater Treatment Plant	
Social	• Would not support planned future growth and provincial mandate • Would not require property acquisition and would not impact surrounding land uses		• Would not require property acquisition • Aesthetic impacts to surrounding properties • Moderate impacts to nearby neighbours during construction		• Would require land acquisition • Aesthetic impacts to surrounding properties • Moderate impacts to nearby neighbours during construction • Potential impacts to nearby land uses depending on effluent discharge location	
Technical	• Capacity would be constrained to 8242 m^3/d		• Assimilative capacity study required to confirm effluent discharge capacity • Must carefully stage construction to maintain current plant operation • Uses existing nearby infrastructure		• Assimilative capacity study required to confirm effluent discharge location and capacity • Less complex construction than Alt. 4 since new facility is independent • New property to consider spatial requirements and constraints	
Cultural	• No construction and therefore no impacts to cultural or archaeological resources		• Possible archeological potential as nearby land has not been developed		• Unknown archaeological and cultural conditions until specific site is selected; archeological and cultural investigation may be required	
Env.	• Would not require construction; therefore, no anticipated impacts • Higher flows without expanding plant may cause bypasses to the environment		• Potential impacts to wildlife, vegetation and wetlands • Potential impacts to effluent discharge location would need to be investigated through an assimilative capacity study or other investigations		• Unknown environmental conditions until specific site is selected; environmental investigation may be required • Investigation required to confirm viability and impacts on effluent discharge location	
Cost	**$$**		**$$$**		**$$$$**	
Sum-mary	**Not recommended due to non-compliance with Provincial Mandate**		**Recommended Alternative**		**Further Investigation Needed**	

Least Positive/ Most Negatives	More Negative Than Positive	Moderate	More Positive Than Negative	Most Positive/ Least Negative
				

Wastewater System: Wastewater Treatment

Recommended Solution



Alternative 4 Expand Existing Wastewater Treatment Plant

- Capacity expansion from 8242 m^3/day (existing) to 13,316 m^3/day (year 2051), based on peak flows.

Next steps:

- An assimilative capacity study is required to confirm effluent discharge capacity, and to confirm if this would support the required future capacity.
- Additional investigation (environmental, archaeological, cultural heritage) required in the future to fulfill requirements of a Schedule C Class EA process.
- Future Schedule C Class EA would confirm preferred solution including technology and footprint requirements.

TOWNSHIP OF CAVAN MONAGHAN

RVA

Next Steps

Following this Public Information Centre (PIC), the Project Team will receive and consider comments from PIC participants and other interested parties.

Feedback received will be considered in finalizing the recommended solutions and will be documented through the Master Servicing Study Report.

The next opportunities for public notification and input will include:

Opportunity	Anticipated Date
Notice of Study Completion Published	Early 2024
Final Report Available for 30-Day Public Review and Comment	Early 2024

TOWNSHIP OF CAVAN MONAGHAN

RVA

Thank you for Attending!

Questions or Comments ?

- Complete a comment sheet this evening or submit comments to a member of the project team.
- More information including copies of project notices and PIC materials can be found at:

www.cavanmonaghan.net

Project Team Contact Information

Wayne Hancock, P.Eng.
Director of Public Works
Township of Cavan Monaghan
988 County Road 10
Millbrook, Ontario, L0A 1G0
(705) 932 9327
whancock@cavanmonaghan.net

Dania Chehab, P. Eng., ENV SP
Project Manager
R.V. Anderson Associates Limited
2001 Sheppard Ave. East, Suite 300
Toronto, Ontario, M2J 4Z8
(416) 497-8600 Ext. 1456
dchehab@rvanderson.com

Please provide your comments by **July 21, 2023**

Include Subject Line: Cavan Monaghan MSS PIC

TOWNSHIP OF CAVAN MONAGHAN

RVA

APPENDIX 6-4

Comments and Correspondence

Correspondence After Notice of Commencement

~

Agencies

Nikash Persaud

To: Rika Law
Subject: RE: 205371- Hydro One Response: Water and Wastewater Master Servicing Plan

From: SecondaryLandUse@HydroOne.com <SecondaryLandUse@HydroOne.com>
Sent: November 17, 2020 2:23 PM
To: Rika Law <rlaw@rvanderson.com>
Cc: whancock@cavanmonaghan.net
Subject: Hydro One Response: Water and Wastewater Master Servicing Plan

[CAUTION EXTERNAL EMAIL] Make Sure that it is legitimate **before** Replying or Clicking on any links

Please see the attached for Hydro One's Response.

Hydro One Networks Inc
SecondaryLandUse@HydroOne.com

This email and any attached files are privileged and may contain confidential information intended only for the person or persons named above. Any other distribution, reproduction, copying, disclosure, or other dissemination is strictly prohibited. If you have received this email in error, please notify the sender immediately by reply email and delete the transmission received by you. This statement applies to the initial email as well as any and all copies (replies and/or forwards) of the initial email

Hydro One Networks Inc
483 Bay St
Toronto, ON

November 17, 2020

Re: Water and Wastewater Master Servicing Plan

Attention:
Ms. Rika Law, P.Eng., PMP
R.V. Anderson Associates Limited

Thank you for sending us notification regarding (Water and Wastewater Master Servicing Plan). In our preliminary assessment, we have confirmed that Hydro One has existing high voltage Transmission facilities within your study area (see map attached). At this time we do not have sufficient information to comment on the potential resulting impacts that your project may have on our infrastructure. As such, we must stay informed as more information becomes available so that we can advise if any of the alternative solutions present actual conflicts with our assets, and if so; what resulting measures and costs could be incurred by the proponent. Note that this response does not constitute approval for your plans and is being sent to you as a courtesy to inform you that we must continue to be consulted on your project.

In addition to the existing infrastructure mentioned above, the applicable transmission corridor may have provisions for future lines or already contain secondary land uses (e.g., pipelines, watermains, parking). Please take this into consideration in your planning.

Also, we would like to bring to your attention that should (Water and Wastewater Master Servicing Plan) result in a Hydro One station expansion or transmission line replacement and/or relocation, an Environmental Assessment (EA) will be required as described under the Class Environmental Assessment for Minor Transmission Facilities (Hydro One, 2016). This EA process would require a minimum of 6 months for a Class EA Screening Process (or up to 18 months if a Full Class EA were to be required) to be completed. Associated costs will be allocated and recovered from proponents in accordance with the Transmission System Code. If triggered, Hydro One will rely on studies completed as part of the EA you are current undertaking.

Consulting with Hydro One on such matters during your project's EA process is critical to avoiding conflicts where possible or, where not possible, to streamlining processes (e.g., ensuring study coverage of expansion/relocation areas within the current EA). Once in receipt of more specific project information regarding the potential for conflicts (e.g., siting, routing), Hydro One will be in a better position to communicate objections or not objections to alternatives proposed.

If possible at this stage, please formally confirm that Hydro One infrastructure and associated rights-of-way will be completely avoided, or if not possible, allocate appropriate lead-time in your project schedule to collaboratively work through potential conflicts with Hydro One, which ultimately could result in timelines identified above.

In planning, note that developments should not reduce line clearances or limit access to our infrastructure at any time. Any construction activities must maintain the electrical clearance from the transmission line conductors as specified in the Ontario Health and Safety Act for the respective line voltage.

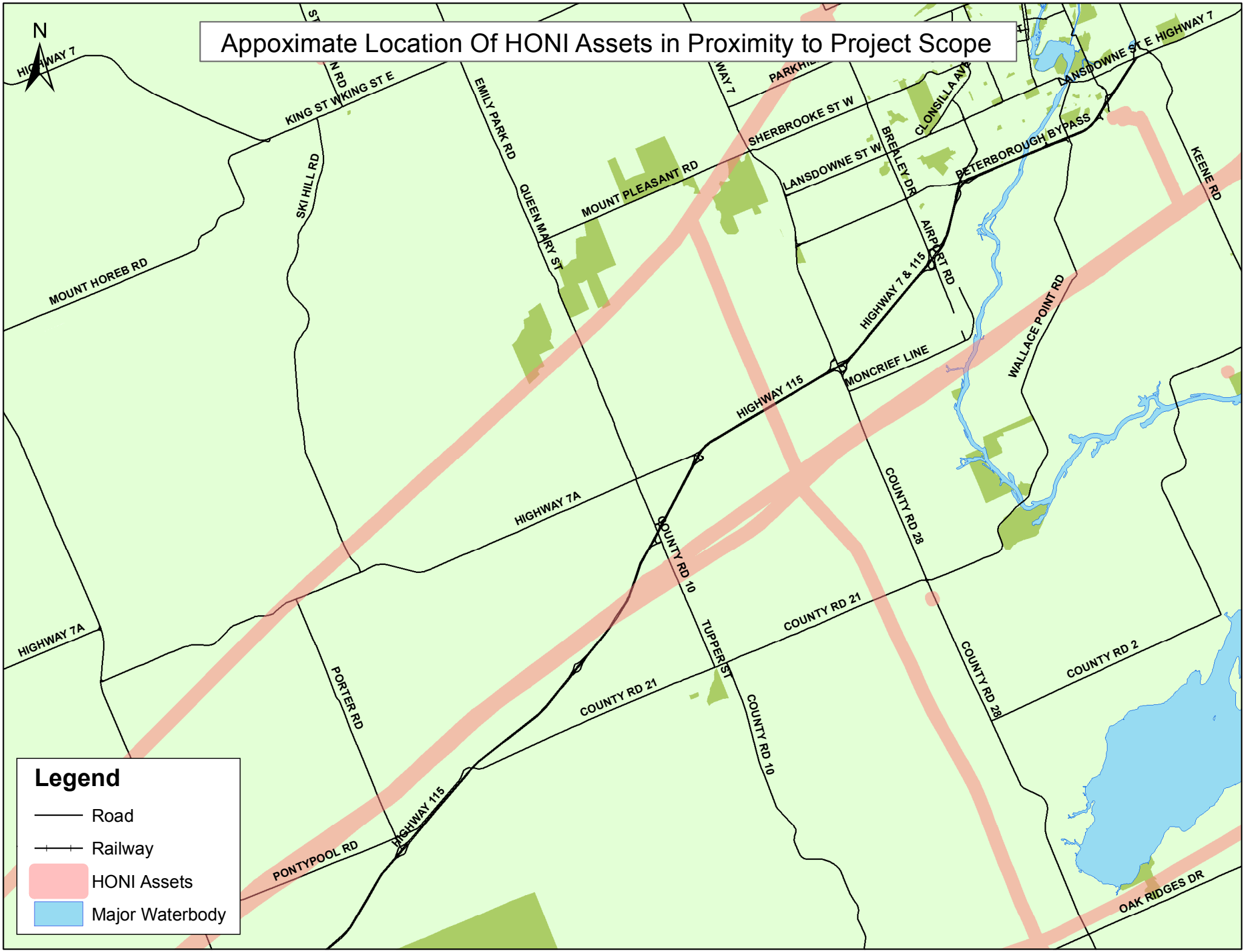
Be advised that any changes to lot grading or drainage within, or in proximity to Hydro One transmission corridor lands must be controlled and directed away from the transmission corridor.

Please note that the proponent will be held responsible for all costs associated with modifications or relocations of Hydro One infrastructure that result from your project, as well as any added costs that may be incurred due to increased efforts to maintain said infrastructure.

We reiterate that this message does not constitute any form of approval for your project. Hydro One must be consulted during all stages of your project. Please ensure that all future communications about this and future project(s) are sent to us electronically to secondarylanduse@hydroone.com

Sent on behalf of,

Secondary Land Use
Asset Optimization
Strategy & Integrated Planning
Hydro One Networks Inc.


Appoximate Location Of HONI Assets in Proximity to Project Scope
N
HIGHWAY 7
KING ST W
KING ST E
EMILY PARK RD
QUEEN MARY ST
SKI HILL RD
MOUNT HOREB RD
MOUNT PLEASANT RD
SHERBROOKE ST W
LANSDOWNE ST W
LANSDOWNE ST E
HIGHWAY 7
BRERALEY DR
CLONSILLA AVE
PETERBOROUGH BYPASS
KEENE RD
AIRPORT RD
HIGHWAY 7 & 115
MONCRIEF LINE
WALLACE POINT RD
HIGHWAY 115
HIGHWAY 7A
COUNTY RD 10
COUNTY RD 28
COUNTY RD 21
COUNTY RD 2
TUPPERIST
PORTER RD
PONTYPOOL RD
OAK RIDGES DR
Legend
Road
Railway
HONI Assets
Major Waterbody

Nikash Persaud

To: Rika Law
Subject: RE: 20201118-Notice of Commencement for the Township of Cavan Monaghan Water and Wastewater Master Servicing Plan Municipal Class Environmental Assessment

From: Brown, Joanna (IO) <Joanna.Brown@infrastructureontario.ca>
Sent: November 18, 2020 2:09 PM
To: whancock@cavanmonaghan.net; Rika Law <rlaw@rvanderson.com>
Cc: Hallen, Frances (IO) <Frances.Hallen@infrastructureontario.ca>; Brown, Joanna (IO) <Joanna.Brown@infrastructureontario.ca>; Yousif, Ramsen (IO) <Ramsen.Yousif@infrastructureontario.ca>
Subject: 20201118-Notice of Commencement for the Township of Cavan Monaghan Water and Wastewater Master Servicing Plan Municipal Class Environmental Assessment

[CAUTION EXTERNAL EMAIL] Make Sure that it is legitimate **before** Replying or Clicking on any links

Good afternoon,

Thank you for sending us the Notice of Commencement for the Township of Cavan Monaghan Water and Wastewater Master Servicing Plan Environmental Assessment.

Please keep IO on the mailing list for the Cavan Monaghan Water and Wastewater Master Servicing Plan Municipal Class Environmental Assessment as a directly affected stakeholder. If government property is required for the project, the proponent should contact me so that IO can advise about requirements for obtaining government property.

Our initial scan indicates that property owned by the Minister of Government and Consumer Services is adjacent to your project's study area. This property includes the former Millbrook Correctional Centre and other parcels identified by the following pins, and shown on the attached maps:

- 280120263
- 280120337
- 280140246
- 280140306
- 280140248 - 280140259
- 280140179
- 280140109
- 280130057
- 280130136
- 280070015
- 280070076
- 280070046
- 280070062
- 280070063
- 510520379

While this was identified in our scan, it is ultimately the proponent's responsibility to verify if provincial government property is within the study area. Title documents may identify owners of provincial government property as any of the following:

- His Majesty the King
- Her Majesty the Queen
- Hydro One
- Hydro One Networks Inc.
- Management Board Secretariat (MBS)
- Minister of Economic Development, Employment and Infrastructure (MEDEI)
- Minister of Energy and Infrastructure (MEI)
- Minister of Government and Consumer Services (MGCS)
- Minister of Infrastructure (MOI)
- Minister of Natural Resources and Forestry (MNRF)
- Minister of Public Infrastructure Renewal (PIR)
- Minister of Public Works
- Minister of Transportation (MTO)
- Ontario Lands Corporation (OLC)
- Ontario Realty Corporation (ORC)

Joanna Brown



Joanna Brown
Infrastructure Ontario
Environmental Specialist

joanna.brown@infrastructureontario.ca
Office: 343-302-7392 | Mobile: 613-328-7301
www.infrastructureontario.ca

From: Dora Ciccarelli <DCiccarelli@rvanderson.com>
Sent: Monday, November 02, 2020 1:32 PM
To: Brown, Joanna (IO) <Joanna.Brown@infrastructureontario.ca>
Subject: 20201102-Notice of Commencement for the Township of Cavan Monaghan Water and Wastewater Master Servicing Plan Municipal Class Environmental Assessment

CAUTION: This email originated from outside of Infrastructure Ontario. Do not click links or open attachment(s) unless you recognize the sender and know the content is safe.

Dear Sir/Madam:

On behalf of the Township of Cavan Monaghan, please see attached, the Notice of Study Commencement, for the Cavan Monaghan Water and Wastewater Master Servicing Plan Municipal Class Environmental Assessment.

This notice is sent to your attention as it was deemed that you may be an interested stakeholder.

Should you wish to stop receiving notices pertaining to this project or would like to direct it to alternate recipient, please advise the undersigned.

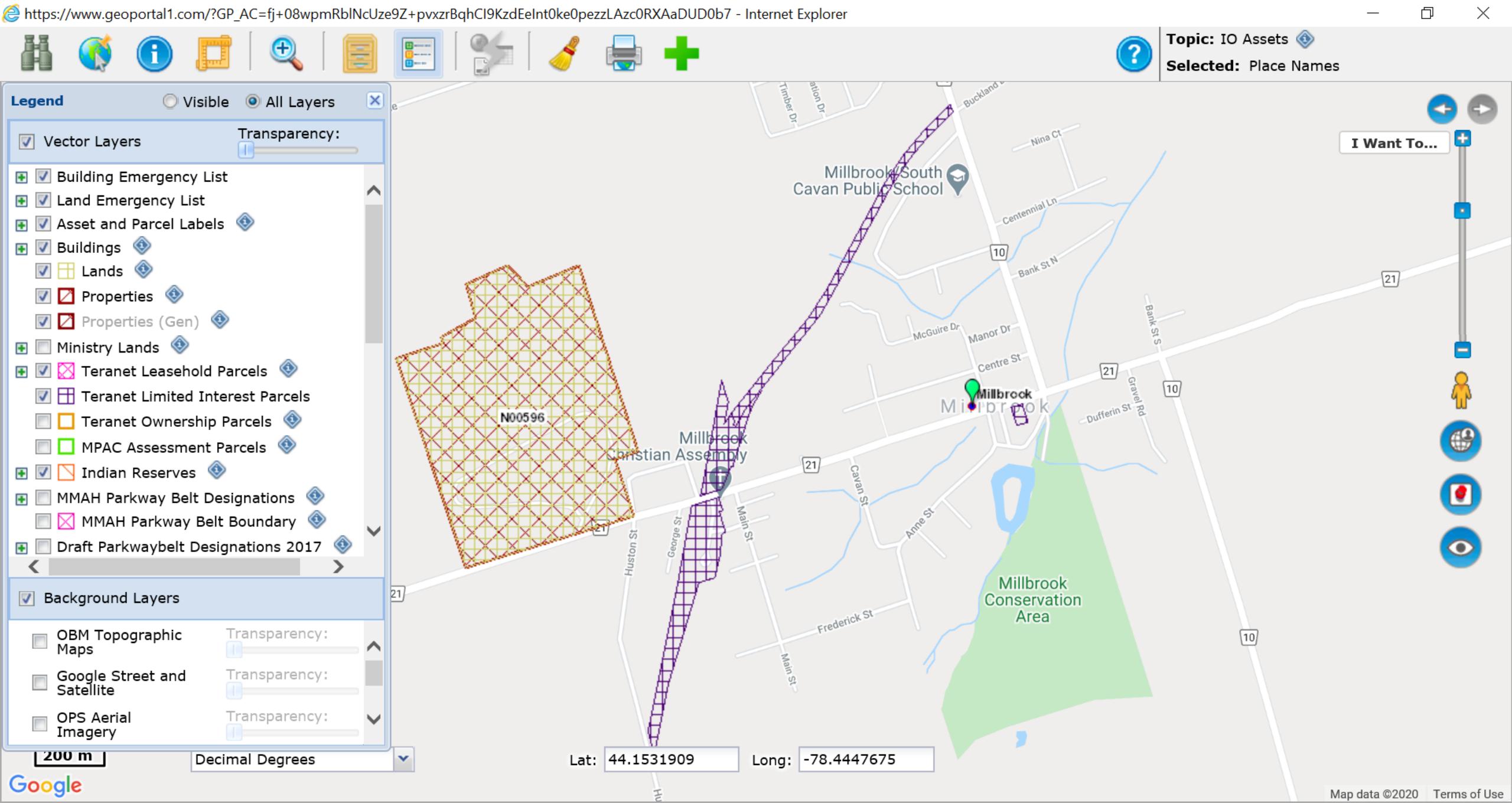
Yours very truly,

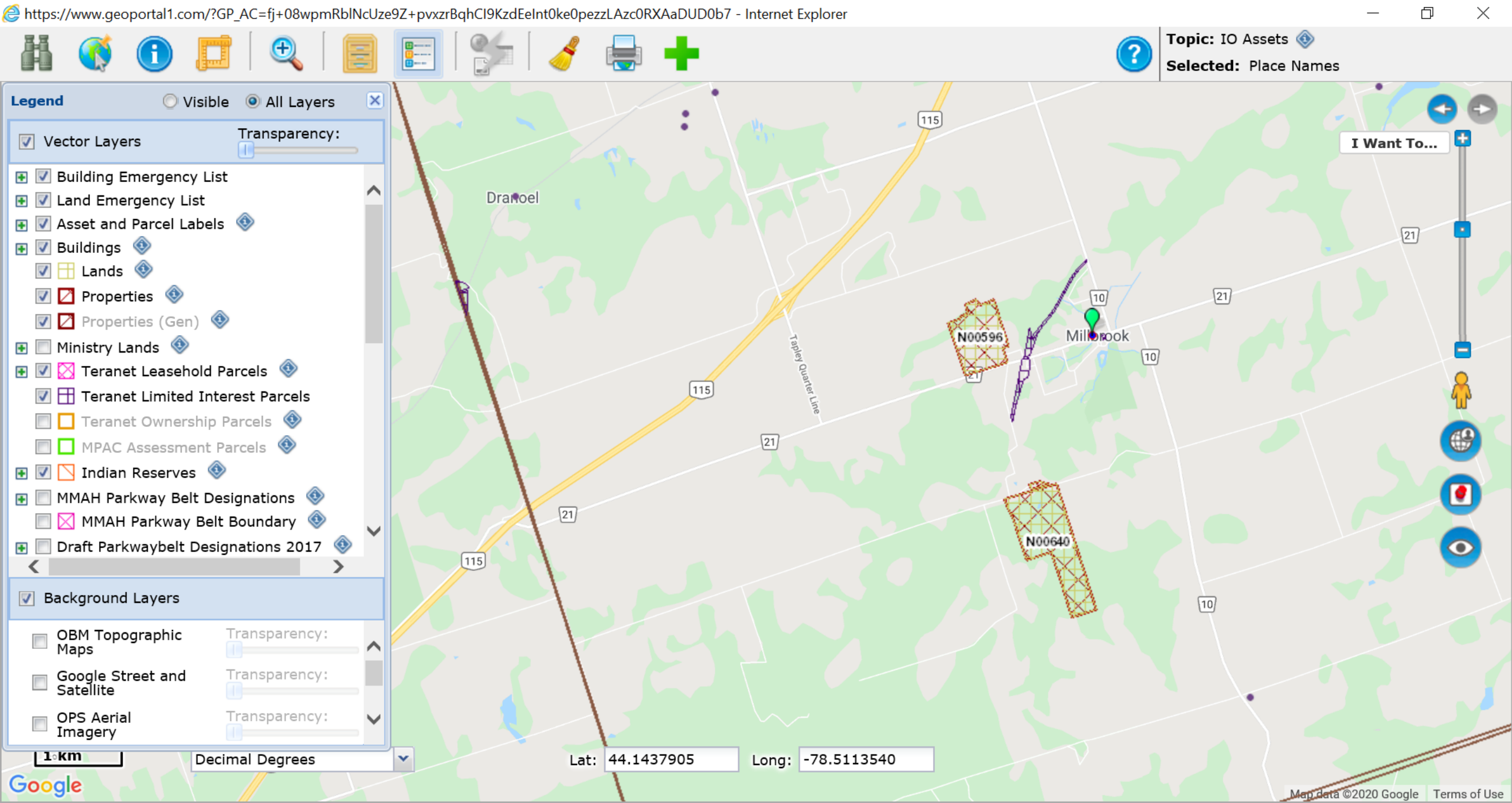
R.V. ANDERSON ASSOCIATES LIMITED

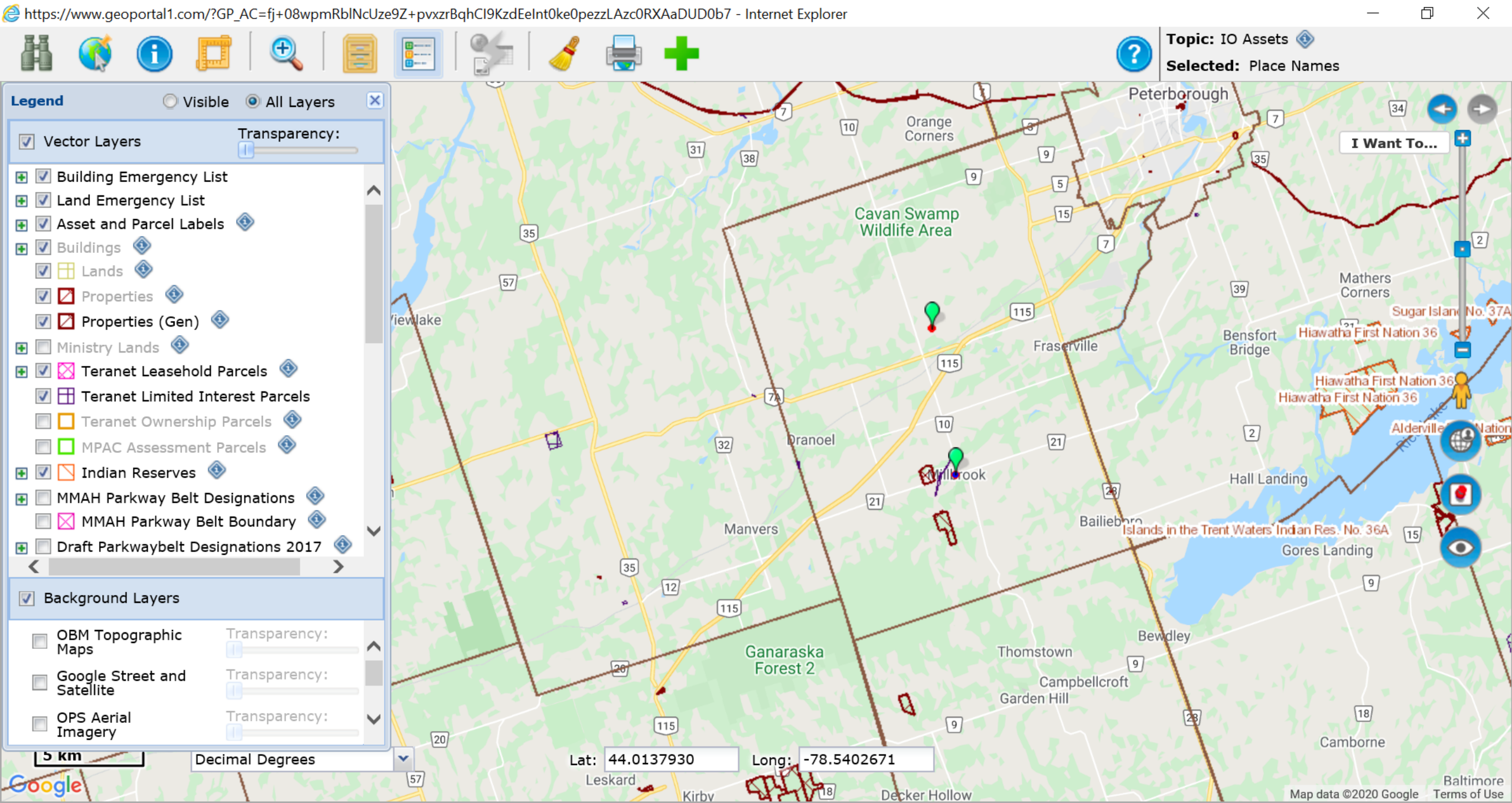
Rika Law, P.Eng., PMP
Project Manager
rlaw@rvanderson.com

R.V. Anderson Associates Limited has been engaged in the provision of professional engineering, operations, and management services since 1948. This message is intended only for the use of the individual(s) to whom it is addressed. If you are not the intended recipient(s), disclosure, copying, distribution and use are prohibited; please notify us immediately and delete this email from your systems. Please see http://www.rvanderson.com for Copyright and Terms of Use.

This email, including any attachments, is intended for the personal and confidential use of the recipient(s) named above. If you are not the intended recipient of the email, you are hereby notified that any dissemination or copying of this email and/or any attachment files is strictly prohibited. If you have received this e-mail in error, please immediately notify the sender and arrange for the return of any and all copies and the permanent deletion of this message including any attachments, without reading it or making a copy. Thank you.


https://www.geoportal1.com/?GP_AC=fj+08wpmRblNcUze9Z+pvxzrBqhCI9KzdEeInt0ke0pezzLAzc0RXAaDUD0b7 - Internet Explorer
Topic: IO Assets
Selected: Place Names
Legend
Visible
All Layers
Vector Layers
Transparency:
Building Emergency List
Land Emergency List
Asset and Parcel Labels
Buildings
Lands
Properties
Properties (Gen)
Ministry Lands
Teranet Leasehold Parcels
Teranet Limited Interest Parcels
Teranet Ownership Parcels
MPAC Assessment Parcels
Indian Reserves
MMAH Parkway Belt Designations
MMAH Parkway Belt Boundary
Draft Parkwaybelt Designations 2017
Background Layers
OBM Topographic Maps
Google Street and Satellite
OPS Aerial Imagery
N00596
Millbrook South Cavan Public School
Millbrook Christian Assembly
Millbrook
Millbrook Conservation Area
I Want To...
200 m
Decimal Degrees
Lat: 44.1531909
Long: -78.4447675
Google
Map data ©2020
Terms of Use


https://www.geoportal1.com/?GP_AC=fj+08wpmRblNcUze9Z+pvxzrBqhCI9KzdEeInt0ke0pezzLAzc0RXAaDUD0b7 - Internet Explorer
Topic: IO Assets
Selected: Place Names
Legend
Visible
All Layers
Vector Layers
Transparency:
Building Emergency List
Land Emergency List
Asset and Parcel Labels
Buildings
Lands
Properties
Properties (Gen)
Ministry Lands
Teranet Leasehold Parcels
Teranet Limited Interest Parcels
Teranet Ownership Parcels
MPAC Assessment Parcels
Indian Reserves
MMAH Parkway Belt Designations
MMAH Parkway Belt Boundary
Draft Parkwaybelt Designations 2017
Background Layers
OBM Topographic Maps
Google Street and Satellite
OPS Aerial Imagery
I Want To...
Dranoel
Millbrook
Tapley Quarter Line
N00596
N00640
115
21
10
1 km
Decimal Degrees
Lat: 44.1437905
Long: -78.5113540
Google
Map data ©2020 Google
Terms of Use


https://www.geoportal1.com/?GP_AC=fj+08wpmRblNcUze9Z+pvxzrBqhCI9KzdEeInt0ke0pezzLAzc0RXAaDUD0b7 - Internet Explorer
Topic: IO Assets
Selected: Place Names
Legend
Visible
All Layers
Vector Layers
Transparency:
Building Emergency List
Land Emergency List
Asset and Parcel Labels
Buildings
Lands
Properties
Properties (Gen)
Ministry Lands
Teranet Leasehold Parcels
Teranet Limited Interest Parcels
Teranet Ownership Parcels
MPAC Assessment Parcels
Indian Reserves
MMAH Parkway Belt Designations
MMAH Parkway Belt Boundary
Draft Parkwaybelt Designations 2017
Background Layers
OBM Topographic Maps
Google Street and Satellite
OPS Aerial Imagery
I Want To...
Peterborough
Orange Corners
Cavan Swamp Wildlife Area
Mathers Corners
Fraserville
Bensfort Bridge
Hiawatha First Nation 36
Dranoel
Millbrook
Hall Landing
Manvers
Islands in the Trent Waters Indian Res. No. 36A
Gores Landing
Ganaraska Forest 2
Bewdley
Thomstown
Campbellcroft
Garden Hill
Camborne
Leskard
Kirby
Decker Hollow
5 km
Decimal Degrees
Lat: 44.0137930
Long: -78.5402671
Google
Map data ©2020 Google
Terms of Use

Nikash Persaud

To: Rika Law
Subject: RE: 20201102-Notice of Commencement for the Township of Cavan Monaghan Water and Wastewater Master Servicing Plan Municipal Class Environmental Assessment

From: EnviroOnt <EnviroOnt@tc.gc.ca>
Sent: November 23, 2020 11:20 AM
To: Carol Derrick <cderrick@rvanderson.com>
Cc: Rika Law <rlaw@rvanderson.com>
Subject: 20201102-Notice of Commencement for the Township of Cavan Monaghan Water and Wastewater Master Servicing Plan Municipal Class Environmental Assessment

[CAUTION EXTERNAL EMAIL] Make Sure that it is legitimate **before** Replying or Clicking on any links

Greetings,

Thank you for your correspondence.

Please note Transport Canada **does not** require receipt of all individual or Class EA related notifications. We are requesting project proponents self-assess if their project:

1. Will interact with a federal property and/or waterway by reviewing the Directory of Federal Real Property, available at at www.tbs-sct.gc.ca/dfrp-rbif/; **and**
2. Will require approval and/or authorization under any Acts administered by Transport Canada* available at http://www.tc.gc.ca/eng/acts-regulations/menu.htm.

Projects that will occur on federal property prior to exercising a power, performing a function or duty in relation to that project, will be subject to a determination of the likelihood of significant adverse environmental effects, per Section 82 of the *Impact Assessment Act, 2019*.

If the aforementioned does not apply, the Environmental Assessment program should not be included in any further correspondence and future notifications will not receive a response. If there is a role under the program, correspondence should be forwarded *electronically* to: EnviroOnt@tc.gc.ca with a **brief description of Transport Canada's expected role**.

*Below is a summary of the most common Acts that have applied to projects in an Environmental Assessment context:

- ***Canadian Navigable Waters Act (CNWA)*** – the Act applies primarily to works constructed or placed in, on, over, under, through, or across navigable waters set out under the Act. The Navigation Protection Program administers the CNWA through the review and authorization of works affecting navigable waters. Information about the Program, CNWA and approval process is available at: http://www.tc.gc.ca/eng/programs-621.html. Enquiries can be directed to NPPONT-PPNONT@tc.gc.ca or by calling (519) 383-1863.

- ***Railway Safety Act (RSA)*** – the Act provides the regulatory framework for railway safety, security, and some of the environmental impacts of railway operations in Canada. The Rail Safety Program develops and enforces regulations, rules, standards and procedures governing safe railway operations. Additional information about

the Program is available at: https://www.tc.gc.ca/eng/railsafety/menu.htm. Enquiries can be directed to RailSafety@tc.gc.ca or by calling (613) 998-2985.

- ***Transportation of Dangerous Goods Act (TDGA)*** – the transportation of dangerous goods by air, marine, rail and road is regulated under the TDGA. Transport Canada, based on risks, develops safety standards and regulations, provides oversight and gives expert advice on dangerous goods to promote public safety. Additional information about the transportation of dangerous goods is available at: https://www.tc.gc.ca/eng/tdg/safety-menu.htm. Enquiries can be directed to TDG-TMDOntario@tc.gc.ca or by calling (416) 973-1868.

- ***Aeronautics Act*** – Transport Canada has sole jurisdiction over aeronautics, which includes aerodromes and all related buildings or services used for aviation purposes. Aviation safety in Canada is regulated under this Act and the Canadian Aviation Regulations (CARs). Elevated Structures, such as wind turbines and communication towers, would be examples of projects that must be assessed for lighting and marking requirements in accordance with the CARs. Transport Canada also has an interest in projects that have the potential to cause interference between wildlife and aviation activities. One example would be waste facilities, which may attract birds into commercial and recreational flight paths. The *Land Use In The Vicinity of Aerodromes* publication recommends guidelines for and uses in the vicinity of aerodromes, available at: https://www.tc.gc.ca/eng/civilaviation/publications/tp1247-menu-1418.htm. Enquires can be directed to at tc.aviationservicesont-servicesaviationont.tc@tc.gc.ca or by calling 1 (800) 305-2059 / (416) 952-0230.

Please advise if additional information is needed.

Thank you,

Environmental Assessment Program, Ontario Region
Transport Canada / Government of Canada / 4900 Yonge St., Toronto, ON M2N 6A5
EnviroOnt@tc.gc.ca / Facsimile : (416) 952-0514 / TTY: 1-888-675-6863

Programme d'évaluation environnementale, Région de l'Ontario
Transports Canada / Gouvernement du Canada / 4900, rue Yonge, Toronto, ON, M2N 6A5
EnviroOnt@tc.gc.ca / télécopieur: (416) 952-0514

From: Carol Derrick [mailto:cderrick@rvanderson.com]
Sent: Monday, November 02, 2020 9:39 AM
To: EnviroOnt <EnviroOnt@tc.gc.ca>
Subject: 20201102-Notice of Commencement for the Township of Cavan Monaghan Water and Wastewater Master Servicing Plan Municipal Class Environmental Assessment

Dear Sir/Madam:

On behalf of the Township of Cavan Monaghan, please see attached, the Notice of Study Commencement, for the Cavan Monaghan Water and Wastewater Master Servicing Plan Municipal Class Environmental Assessment.

This notice is sent to your attention as it was deemed that you may be an interested stakeholder.

Should you wish to stop receiving notices pertaining to this project or would like to direct it to alternate recipient, please advise the undersigned.

Yours very truly,

R.V. ANDERSON ASSOCIATES LIMITED

Rika Law, P.Eng., PMP
Project Manager
rlaw@rvanderson.com

R.V. Anderson Associates Limited has been engaged in the provision of professional engineering, operations, and management services since 1948. This message is intended only for the use of the individual(s) to whom it is addressed. If you are not the intended recipient(s), disclosure, copying, distribution and use are prohibited; please notify us immediately and delete this email from your systems. Please see http://www.rvanderson.com for Copyright and Terms of Use.

Nikash Persaud

To: Rika Law
Subject: RE: Cavan/Monaghan Master Servicing Plan - Notice of Commencement MECP response

From: Orpana, Jon (MECP) <Jon.Orpana@ontario.ca>
Sent: November 27, 2020 1:40 PM
To: whancock@cavanmonaghan.net
Cc: Rika Law <rlaw@rvanderson.com>; Fuller, Jacqueline (MECP) <Jacqueline.Fuller@ontario.ca>
Subject: Cavan/Monaghan Master Servicing Plan - Notice of Commencement MECP response

[CAUTION EXTERNAL EMAIL] Make Sure that it is legitimate **before** Replying or Clicking on any links

Hello Mr. Hancock,

Please find attached MECP's preliminary comments on the above mentioned project.

Included is confirmation of the Indigenous communities to consult with on this project.

Regards,

Jon

Jon Orpana,
Environmental Planner / Environmental Assessment Coordinator
Ontario Ministry of the Environment, Conservation and Parks
Environmental Assessment and Permissions Division
Environmental Assessment Branch
1259 Gardiners Road, Unit 3
Kingston, Ontario
K7P 3J6

Cell Ph. 613-561-8250
Phone Number. 613 548-6918
jon.orpana@ontario.ca

Ministry of the Environment, Conservation and Parks

Environmental Assessment Branch

1st Floor
135 St. Clair Avenue W
Toronto ON M4V 1P5
Tel.: 416 314-8001
Fax.: 416 314-8452

Ministère de l'Environnement, de la Protection de la nature et des Parcs

Direction des évaluations environnementales

Rez-de-chaussée
135, avenue St. Clair Ouest
Toronto ON M4V 1P5
Tél. : 416 314-8001
Téléc. : 416 314-8452

By email only

November 27, 2020

Township of Cavan Monaghan
Public Works
988 County Road 10
Millbrook, ON L0A

Attention: Mr. Wayne Hancock, P.Eng.

Dear Mr. Hancock,

Re: Water and Wastewater Master Servicing Plan – Notice of Commencement Class Environmental Assessment – Township of Cavan Monaghan; County of Peterborough

Thank you for the Notice of Study Commencement provided by email on November 9th along with the Project Information Form. The notice indicates that the Township of Cavan Monaghan is undertaking a Water and Wastewater Master Servicing Plan addressing Phases 1 and 2 of the Municipal Class Environmental Assessment (Class EA), June 2000, as amended in 2015. The Master Plan is intended to follow "Approach 1" of the Class EA, a process that will be done at a broad level of assessment to identify a conceptual plan for water and wastewater servicing in the Township. The project is intended to address Township improvement and growth opportunities, considering this in the context of the Township of Cavan Monaghan Official Plan.

Here are MECP preliminary comments on the project. Please consider these comments as you proceed through the Class EA process. The comments are grouped under these headings:

- Class EA process,
- MECP technical review issues,
- Aboriginal consultation

Class Environmental Assessment Process

Notification

As the Regional EA Coordinator for this project, I will be responsible for circulating project notices and information to MECP reviewers and coordinating the MECP response during the Class EA process. I am the mandatory contact for all notices issued for the project.

- Please provide copies of all notices by email (pdf) to the regional Email address at eanotification.eregion@ontario.ca. Notices of Completion must be sent to the ministry in accordance with section 15.1 (1) of the amended *Environmental Assessment Act.*
- Please provide scanned copies of the notices as they appear in newspapers and confirm the dates of publication.

Please contact:

Jon Orpana, Environmental Assessment Coordinator
Ministry of the Environment, Conservation and Parks
1259 Gardiners Road
P.O. Box 22032
Kingston, Ontario
K7M 8S5
email: jon.orpana@ontario.ca

Notice of Completion

It is acknowledged that the Proponent is following approach #1 for Master Plans. Approach #1 involves the Master Plan being done at a broad level of assessment thereby requiring more detailed investigations at the project-specific level in order to fulfil the Municipal Class EA documentation requirements for the specific Schedule B and C projects identified within the Master Plan. The Master Plan would therefore become the basis for, and be used in support of, future investigations for the specific Schedule B and C projects identified within it. Schedule B projects would require the filing of the Project file for public review while Schedule C projects would have to fulfil Phases 3 and 4 prior to filing an Environmental Study Report for public review.

Once the Master Plan report is finalized, the proponent must issue a Notice of Completion providing a minimum 30-day period during which documentation may be reviewed and comment and input can be submitted to the Proponent, prior to being approved by the municipality. As the Part II Order provisions only apply to specific projects completing the Class EA process and not the Master Plan document itself, there are no Part II Order provisions at the time of completion of the Master Plan for approach #1. Projects identified in the Master Plan will be subject to Part II Order provisions at the time of filing of a Project File or Environmental Study Report.

Master Plan Process

The Master Plan process is discussed in section A.2.7 and Appendix 4 of the Class EA. Appendix 4 of the Class EA sets out different approaches that could be followed, and includes sample notices. Again we note that approach 1 is being followed.

The proponent should be aware that copies of notices must be provided to the Director of this ministry's Environmental Approvals Branch, with a brief summary of how the Master Plan followed the Class EA requirements. This information is required to be sent to EAB for tracking purposes, to monitor the effectiveness of the Master Plan approach at MEANoticesEAAB@ontario.ca.

The Master Plan document should clearly define the projects which will be carried out under the Master Plan, the appropriate schedule for each project, future documentation or studies that will be needed, and future public consultation opportunities for each project or class of projects. The Master Plan should also explain the appeal mechanisms for the projects in the plan (for example, opportunities to request a Part II Order at a later date, appeal to LPAT if integration with a Planning Act approval is proposed). We recommend that the Master Plan include a chart which summarizes the above information.

As the Master Plan is intended to satisfy Phases 1 and 2 of the Municipal Class EA process, the Master Plan should evaluate alternatives and identify impacts to the environment. The description and evaluation of alternatives should be completed in sufficient detail to allow any reviewer to understand the advantages and disadvantages of each alternative and the rationale for selecting the preferred alternative. The Master Plan may also identify technical studies that will be carried out in future as the individual projects within the Master Plan are further developed.

Consultation with Review Agencies

In addition to public consultation, consultation with review agencies is an important component of the Class EA process. Please ensure that you contact review agencies directly to determine their interest in the project at the Notice of Commencement stage.

The MECP Regional office is a mandatory contact for all notices. In addition, other ministries and agencies that may have an interest in the project are listed in section A.3.6 and Appendices 3 and 7. The provincial ministries that are most often involved in Class EA project review include the Ministry of Municipal Affairs (for example, expansion of settlement boundaries, consistency with Growth Plan), Ministry of Natural Resources and Forestry (for example, significant wetlands), and Ministry of Tourism, Culture and Sport (for example, cultural heritage or archaeological resources).

The Master Plan should consider any impacts to servicing policies for the area. For example, the Province does not support growth on partial services. In addition, expansion of settlement boundaries may have implications for the Official Plan. We recommend that the local Ministry of Municipal Affairs Municipal Services Office be included in the government review agency consultation list for this project.

The final report should include information on correspondence with review agencies, issues raised by reviewers, and how these issues will be addressed. This could include technical studies or other information, and commitments to obtain specific approvals or permits.

We normally recommend that intermediate reports or Technical Memoranda, be prepared and circulated for comment before the final Report is prepared. This is not a requirement of the Municipal Class Environmental Assessment (Class EA) process; however, it can ensure that consultation with review agencies is carried out in an effective way and that technical comments are received from agencies before the report is finalized.

<u>MECP Technical Review</u>

This Ministry's technical review of infrastructure projects could consider:

- problems identified during MECP inspections of the existing facilities,
- impacts to the receiving water body due to increased volumes of sewage treatment plant effluent,
- impacts to source protection areas,
- quality of the drinking water source,
- potential to impact wells during operation of an expanded municipal water supply,
- impacts to groundwater and surface water due to construction (i.e. dewatering of trenches during installation of sewers and watermains, control of erosion and sedimentation, construction and/or dredging at outfall or intake locations),

- potential for encountering landfill sites, contaminated soil, contaminated sediment or groundwater during construction,
- management of excess materials, waste, contaminated soil and groundwater during construction,
- noise and air quality impacts to nearby residents or planned subdivisions,
- information on inflow and infiltration to the sewage collection system and remedial measures under consideration,
- information on the available capacity at sewage or water treatment plants to service design population,
- proposed water and sewage service areas.
- consideration of Species at Risk,
- consideration of Climate Change,

These environmental issues, and appropriate mitigation measures, should be addressed during the Class EA process.

We recommend that you contact this office as soon as possible during the environmental assessment process if you become aware of:

- contaminated sites in the study area or influence area of the project,
- a source water protection vulnerable area in the vicinity of the project, or
- issues that are contentious to the general public.

Water Resources

For a new or expanded water supply from a groundwater source, please submit a hydrogeological assessment as part of the Class EA process. Taking more than 50,000 litres a day from a lake, river, stream or groundwater source for a water supply requires a Permit to Take Water.

Impacts to surface water due to increased volumes or concentrations of sewage effluent should be evaluated as soon in the Municipal Class EA process as possible. A site-specific receiving water assessment must be conducted to determine the effluent requirements based on the waste assimilative capacity of the receiver. The site-specific effluent requirements derived from the receiving water assessment must be compared to provincial guidelines for effluent discharge (MOE procedure F-5-1: *Determination of Treatment Requirements for Municipal and Private Sewage Treatment Works Discharging to Surface Waters*), and the most stringent criteria will apply. The receiving stream assessment, including background water quality and flow data, must be provided to MECP by the proponent.

If construction involves taking, dewatering, storage or diversion of water in excess of 50,000 litres per day, the activity may be required to be registered on the Environmental Activity and Sector Registry (EASR) or may require a Permit To Take Water. The

process to be used depends on the source of the water, the quantity of water taken, and the type of construction activity. EASR requirements for water takings for construction dewatering are prescribed in Ontario Regulation 63/16 under the Environmental Protection Act. The Permit To Take Water requirements are prescribed in Section 34, Ontario Water Resources Act.

Guidance on nearshore construction and dredging may be obtained from the following MECP guidelines:

- *B-6 Guidelines for Evaluating Construction Activities Impacting on Water Resources,*
- *Evaluating Construction Activities Impacting on Water Resources, Part III A, Part III B, and Part III C* (dredging handbook) and accompanying *Appendix A Provincial Sediment Quality Guidelines,*
- *Guidelines for Identifying, Assessing and Managing Contaminated Sediments in Ontario: An Integrated Approach.*

Source Protection

Proponents undertaking a Municipal Class EA project must identify early in the process whether a project is occurring within a source water protection vulnerable area. This must be clearly documented in a Master Plan, Project File report or Environmental Study Report. If the project is occurring in a vulnerable area, then there may be policies in the local Source Protection Plan (SPP) that need to be addressed (requirements under the Clean Water Act). The proponent should contact and consult with the appropriate Conservation Authority/Source Protection Authority (CA/SPA) to discuss potential considerations and policies in the SPP that apply to the project.

Please include a section in the report on Source Water Protection. Specifically, it should discuss whether or not the project is located in a vulnerable area or changes or creates new vulnerable areas, and provide applicable details about the area. If located in a vulnerable area, proponents should document whether any project activities are a prescribed drinking water threat and thus pose a risk to drinking water (please consult with the appropriate CA/SPA). Where an activity poses a risk to drinking water, the proponent must document and discuss in the report how the project adheres to or has regard to applicable policies in the local SPP. If creating or changing a vulnerable area, proponents should document whether any existing uses or activities may potentially be affected by the implementation of source protection policies. This section should then be used to inform and should be reflected in other sections of the report, such as the identification of net positive/ negative effects of alternatives, mitigation measures, evaluation of alternatives etc. Even if the project activities in a vulnerable area are deemed to not to be a drinking water risk, there may be other policies that apply, so consultation with the local CA/SPA is important.

Contaminated Sites and Waste Management

The proponent should consider the potential that the project may be constructed in an area of contamination. If an area of contamination is present, the EA should determine the appropriate management of contaminated soil, sediment and groundwater as well as consider health and safety measures.

Waste, including contaminated soil, must be managed in accordance with MECP standards. The *Environmental Protection Act* (EPA) and Regulation 347 require waste to be classified and disposed of appropriately. When determining the waste category, the proponent must ensure compliance with Schedule 4 of Regulation 347.

Where the removal and movement of soils is required for the project, we recommend that you refer to the MECP document *Management of Excess Soil – A Guide for Best Management Practices*.

We recommend that the proponent consider development of an Excess Materials Management Plan for identification, assessment, excavation, conveyance, treatment, staging, grading and/or off-site disposal/re-use of soils and aggregates generated within the study area during construction.

The Waste Disposal Site Inventory, dated June 1991, may be helpful in identifying the locations of open and closed waste disposal sites in Ontario.

Consultation with First Nation and Métis Communities

The Crown has a legal duty to consult Aboriginal communities when it has knowledge, real or constructive, of the existence or potential existence of an Aboriginal or treaty right and contemplates conduct that may adversely impact that right. Before you can proceed with this project, the Crown must ensure that its duty to consult has been fulfilled, where such a duty is triggered. Although the duty to consult with Aboriginal peoples is a duty of the Crown, the Crown may delegate procedural aspects of this duty to project proponents while retaining oversight of the process.

Your proposed project may have the potential to affect Aboriginal or treaty rights protected under Section 35 of Canada's *Constitution Act* 1982. Where the Crown's duty to consult is triggered in relation to your proposed project**, the MECP is delegating the procedural aspects of rights-based consultation to you through this letter.** The Crown intends to rely on the delegated consultation process in discharging its duty to consult and maintains the right to participate in the consultation process as it sees fit.

Based on information you have provided to date and the Crown`s preliminary assessment you are required to consult with the following Aboriginal communities who have been identified as potentially affected by your proposed project:

- **Alderville First Nation**
- **Curve Lake First Nation**
- **Hiawatha First Nation**
- **Mississaugas of Scugog Island First Nation**
  For the above Williams Treaties communities, please cc Karry Sandy McKenzie, William Treaties First Nations Process Coordinator, inquiries@williamstreatiesfirstnations.ca
- **Kawartha Nishnawbe**
- **MNO Peterborough and District Wapiti Métis Council – please cc Métis Nation of Ontario (MNO) on any correspondence going to the council**

Steps that you may need to take in relation to Aboriginal consultation for your proposed project are outlined in the "Code of Practice for Consultation in Ontario's Environmental Assessment Process" which can be found at the following link:

https://www.ontario.ca/document/consultation-ontarios-environmental-assessment-process

Additional information related to Ontario's Environmental Assessment Act is available online at: www.ontario.ca/environmentalassessments

You must contact the Director of Environmental Assessment and Permissions Branch under the following circumstances subsequent to initial discussions with the communities identified by MECP:

- Aboriginal or treaty rights impacts are identified to you by the communities
- You have reason to believe that your proposed project may adversely affect an Aboriginal or treaty right
- Consultation has reached an impasse
- A Part II Order request or elevation request is expected (Project(s) specific).

The Director can be notified by email, mail or fax using the information provided below:

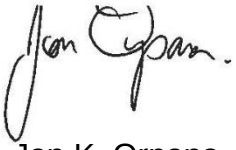
Email:	enviropermissions@ontario.ca Subject: Potential Duty to Consult
Fax:	416-314-8452
Address:	Environmental Assessment and Permissions Branch 135 St. Clair Avenue West, 1st Floor Toronto, ON, M4V 1P5

MECP will then assess the extent of any Crown duty to consult for the circumstances and will consider whether additional steps should be taken, including what role you will be asked to play should any additional steps and activities be required.

Thank you for your notification regarding this project and your ongoing care of the environment.

If you have questions or concerns about the above comments, please contact this office. I have appended some resources which you may find useful in consideration of some subject areas which are of interest to this ministry.

Regards,



Jon K. Orpana
Environmental Planner & Environmental Assessment Coordinator
Ministry of the Environment, Conservation and Parks
Kingston Regional Office
PO Box 22032, 1259 Gardiners Road
Kingston, Ontario
K7M 8S5

Phone: (613) 548-6918
Fax: (613) 548-6908
Email: jon.orpana@ontario.ca

EC.

Ms. Rika Law, P. Eng., PMP
R.V. Anderson and Associates Ltd.
rlaw@rvanderson.com

Ms. Jacqueline Fuller, Drinking Water and Compliance Supervisor
Peterborough District
Ministry of Environment Conservation and Parks
Jacqueline.Fuller@ontario.ca

Climate Change

Ontario is leading the fight against climate change through the Climate Change Action Plan (https://www.ontario.ca/page/climate-change-action-plan). Recently released, the plan lays out the specific actions Ontario will take in the next five years to meet its 2020 greenhouse gas reduction targets and establishes the framework necessary to meet its long-term targets. As a commitment of the action plan, **the province has now finalized a guide, "Considering Climate Change in the Environmental Assessment Process" (Guide) (https://www.ontario.ca/page/considering-climate-change-environmental-assessment-process)**

The Guide is now a part of the Environmental Assessment program's Guides and Codes of Practice. The Guide sets out the MECP's expectation for considering climate change in the preparation, execution and documentation of environmental assessment studies and processes. The guide provides examples, approaches, resources, and references to assist proponents with consideration of climate change in EA.
Proponents should review this Guide in detail.

- The MECP expects proponents to:

Consider during the assessment of alternative solutions and alternative designs, the following:

a. the project's expected production of greenhouse gas emissions and impacts on carbon sinks (climate change mitigation); and
b. resilience or vulnerability of the undertaking to changing climatic conditions (climate change adaptation).

2. Include a discrete section in the report detailing how climate change was considered in the EA.

How climate change is considered can be qualitative or quantitative in nature and should be scaled to the project’s level of environmental effect. In all instances, both a project's impacts on climate change (mitigation) and impacts of climate change on a project (adaptation) should be considered.

- The MECP has also prepared another guide to support provincial land use planning direction related to the completion of energy and emission plans. The "Community Emissions Reduction Planning: A Guide for Municipalities" (https://ero.ontario.ca/notice/013-2083?_ga=2.113331267.532557834.1525694946-2101883328.1501507205) document is designed to educate stakeholders on the municipal opportunities to reduce energy and greenhouse gas emissions, and to provide guidance on methods and techniques to incorporate consideration of energy and greenhouse gas emissions into municipal activities of all types. We encourage you to review the Guide for information.

Excess Materials Management

- In December 2019, MECP released a new regulation under the Environmental Protection Act, titled “On-Site and Excess Soil Management” (O. Reg. 406/19) to support improved management of excess construction soil. This regulation is a key step to support proper management of excess soils, ensuring valuable resources don’t go to waste and to provide clear rules on managing and reusing excess soil. New risk-based standards referenced by this regulation help to facilitate local beneficial reuse which in turn will reduce greenhouse gas emissions from soil transportation, while ensuring strong protection of human health and the environment. The new regulation is being phased in over time, with the first phase set to come into effect on January 1, 2021. Please visit https://www.ontario.ca/page/handling-excess-soil.

- Activities involving the management of excess soil should be completed in accordance with O. Reg. 406/19 and the MECP’s current guidance document titled “Management of Excess Soil – A Guide for Best Management Practices” (2014) (https://www.ontario.ca/page/management-excess-soil-guide-best-management-practices).

All waste generated during construction must be disposed of in accordance with ministry requirements

Species at Risk

- The Ministry of the Environment, Conservation and Parks has now assumed responsibility of Ontario’s Species at Risk program. For any questions related to consideration of SAR and subsequent permit requirements, please contact SAROntario@ontario.ca.

Nikash Persaud

To: Rika Law
Subject: RE: 20201102-Notice of Commencement for the Township of Cavan Monaghan Water and Wastewater Master Servicing Plan Municipal Class Environmental Assessment

From: Warren, Catherine (MNRF) <Catherine.Warren@ontario.ca>
Sent: January 12, 2021 11:07 AM
To: Paul Mikoda <pmikoda@rvanderson.com>
Cc: Rika Law <rlaw@rvanderson.com>; Tisha Doucette <TDoucette@rvanderson.com>; Courtney Beneteau <cbeneteau@rvanderson.com>
Subject: RE: 20201102-Notice of Commencement for the Township of Cavan Monaghan Water and Wastewater Master Servicing Plan Municipal Class Environmental Assessment

[CAUTION EXTERNAL EMAIL] Make Sure that it is legitimate **before** Replying or Clicking on any links

Hello all,

I will put together some information for you on natural heritage features and get back to you soon. For species at risk, the Ministry of Environment, Conservation and Parks (MECP) has now assumed responsibility for the Endangered Species Act (ESA), including species at risk (SAR) in Ontario. Please contact SAROntario@ontario.ca to reach the MECP for advice about species at risk and the ESA.

All the best,
Catherine

From: Paul Mikoda <pmikoda@rvanderson.com>
Sent: January 8, 2021 6:48 PM
To: Warren, Catherine (MNRF) <Catherine.Warren@ontario.ca>
Cc: Rika Law <rlaw@rvanderson.com>; Tisha Doucette <TDoucette@rvanderson.com>; Courtney Beneteau <cbeneteau@rvanderson.com>
Subject: RE: 20201102-Notice of Commencement for the Township of Cavan Monaghan Water and Wastewater Master Servicing Plan Municipal Class Environmental Assessment

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Hello Catherine,

Thank you for your offer of assistance on this project.

R.V. Anderson Associates (RVA) has been retained by the Township of Cavan-Monaghan, located within Peterborough County, to prepare a Water and Wastewater Master Servicing Study including a Class Environmental Assessment for the Township, with a focus on the Millbrook settlement area. The focused Study Area is attached (**Study Area Map**). The project falls within the jurisdiction of Otonabee Conservation (OC) as well as the Ministry of the Environment,

Conservation and Parks (MECP) Peterborough District, and the Ministry of Natural Resources and Forestry (MNRF) Peterborough District. There are a number of watercourses or waterbodies in or adjacent to the Study Area.

RVA has undertaken a desktop review of the following information sources as pertains to the Study Area, as per the Client's Guide to Preliminary Screening for SAR (MECP, May 2019) including:

- Natural Heritage Information Center database (accessed via MNRF's Make-a-Map: Natural Heritage Areas application (NAD83 Atlas 1km squares within the focused Study Area: 17QJ0290, 17QJ0291, 17QJ0292, 17QJ0390, 17QJ0390, 17QJ0391, 17QJ0392, 17QJ0490, 17QJ0491, 17QJ0492);
- Ontario Breeding Bird Atlas (OBBA) Archives (Atlas square: 17QJ09);
- Ontario Reptile and Amphibian Atlas (ORAA) (Atlas square: 17QJ09);
- Ontario Butterfly Atlas; Moth Atlas (Atlas square: 17QJ09); and
- Aquatic resource area (ARA) polygon segments and points (Ontario GeoHub)
- Department of Fisheries and Oceans Aquatic Species at Risk Map
- iNaturalist.

Details regarding the records of Species at Risk (SAR) and rare species noted in the vicinity of the Study Area, including their associated S-ranks and status under the Endangered Species Act, are shown in **Table 1** (attached).

The NHIC database indicates two Natural Areas (Cavan Till and Millbrook Conservation Area) within the Study Area, and that sections fall within the Oak Ridges Moraine Conservation Plan boundary. A number of locally significant or unevaluated wetlands are also present within the Study Area.

At this time, we would like to request any additional/supplemental natural heritage information that may be available in addition to those sources, as well as any concerns with the proposed project as related to natural heritage.

Please feel free to contact me if you have any questions or concerns with this request. A response to acknowledge your receipt of this email would be greatly appreciated.

Best regards,

Paul

RVA IS GROWING!
Our NEW Halton and Halifax offices are now open.

Paul Mikoda, B.Sc.
Terrestrial Ecologist
P: (519) 681-9916 ext. 5040
C: (905) 516-3132
R.V. Anderson Associates Limited
557 Southdale Road East, Suite 200, London, ON N6E 1A2
rvanderson.com

From: Warren, Catherine (MNRF) <Catherine.Warren@ontario.ca>
Sent: December 4, 2020 10:45 AM
To: Carol Derrick <cderrick@rvanderson.com>; Rika Law <rlaw@rvanderson.com>
Subject: RE: 20201102-Notice of Commencement for the Township of Cavan Monaghan Water and Wastewater Master Servicing Plan Municipal Class Environmental Assessment

[CAUTION EXTERNAL EMAIL] Make Sure that it is legitimate **before** Replying or Clicking on any links

Hello Carol and Rika,

Thanks for this notice. Please let me know if MNRF can provide any useful information on natural heritage features.

All the best,
Catherine

From: Carol Derrick <cderrick@rvanderson.com>
Sent: November 2, 2020 9:40 AM
To: Warren, Catherine (MNRF) <Catherine.Warren@ontario.ca>
Subject: 20201102-Notice of Commencement for the Township of Cavan Monaghan Water and Wastewater Master Servicing Plan Municipal Class Environmental Assessment

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Dear Sir/Madam:

On behalf of the Township of Cavan Monaghan, please see attached, the Notice of Study Commencement, for the Cavan Monaghan Water and Wastewater Master Servicing Plan Municipal Class Environmental Assessment.

This notice is sent to your attention as it was deemed that you may be an interested stakeholder.

Should you wish to stop receiving notices pertaining to this project or would like to direct it to alternate recipient, please advise the undersigned.

Yours very truly,

R.V. ANDERSON ASSOCIATES LIMITED

Rika Law, P.Eng., PMP
Project Manager
rlaw@rvanderson.com

R.V. Anderson Associates Limited has been engaged in the provision of professional engineering, operations, and management services since 1948. This message is intended only for the use of the individual(s) to whom it is addressed. If you are not the intended recipient(s), disclosure, copying, distribution and use are prohibited; please notify us immediately and delete this email from your systems. Please see http://www.rvanderson.com for Copyright and Terms of Use.

R.V. Anderson Associates Limited has been engaged in the provision of professional engineering, operations, and management services since 1948. This message is intended only for the use of the individual(s) to whom it is addressed. If you are not the intended recipient(s), disclosure, copying, distribution and use are prohibited; please notify us immediately and delete this email from your systems. Please see http://www.rvanderson.com for Copyright and Terms of Use.

Correspondence After Notice of Commencement

~

Organizations

Hi Craig

Good questions. My responses are in blue below.
Please advise if that addresses your concerns or if you have any follow up questions.

Thanks

Rika Law, P.Eng., PMP (she/her)

Team Lead, Principal



R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300, Toronto ON M2J 4Z8
t 416 497 8600 ext. 1209
LinkedIn | Facebook | Website



SUMMER HOURS NOTICE: RVA offices will be closed each Friday from June 2nd to September 8th as we celebrate the summer season. We will be available for project and construction related matters. For urgent requests, please contact office number.

From: Craig Onafrychuk <conafrychuk@hotmail.com>
Sent: Friday, July 7, 2023 6:01 PM
To: Rika Law <rlaw@rvanderson.com>; randres@rjandres.com
Cc: Graham Whitelaw <graham.whitelaw@gmail.com>; Dania Chehab <dchehab@rvanderson.com>; Wayne Hancock <whancock@cavanmonaghan.net>; Noel Kerin <nkerin@kohc.ca>; cgrayson <cgrayson@nexicom.net>
Subject: Cavan-Monaghan WWMS Plan - BCWA questions and comments

[CAUTION EXTERNAL EMAIL] Make Sure that it is legitimate **before** Replying or Clicking on any links

Hi Rika and Reg,

It was a pleasure meeting with you folks last month on June 7th.

I wanted to follow-up with you as neither Graham or I were able to attend the PIC open house. I'm copying Noel Kerin who is one of our directors and was at the PIC. Also including Chris Grayson, our board chair.

Graham has offered to lead a submission of questions and comments from BCWA regarding the Master Servicing Study Public Information Materials and study. So we are aware those materials are accessible and appreciate that.

Our understanding is our questions and comments are due by July 21 and would need to be submitted to Dania Chehab at RV Anderson and Wayne Hancock with the township.

I wanted to ask what the process would be for responding to any questions or comments we have.

Would that be simply through way of a public posting, or would there be an opportunity to submit a draft of questions and comments for review prior to July 21? Are all questions and comments posted publicly? Are you able to share any questions or comments received to date? [RVA – public/agency comments provided will be reviewed and addressed by the Project Team privately back to the original requester. However as part of the consultation and transparent nature of the Class EA process, we will be including the comments received and the responses provided in the final Master Servicing Report as an appendix. Any private information (i.e. address, phone number, email) of individuals (not organizations) would be redacted. If you have specific information/data you wish to share with us in confidence, please note that and we will leave it out of the public record. Or if there is specific data that is sensitive and you wish to have a discussion with us on how the information may be used, we can set up a meeting.

The desire for comments to be received by July 21st is because we would like to understand the sentiments of the public/agencies of the PIC material presented and then have time for addressing and taking appropriate action/redirection if required and move onto the next phases of the project rather than being at the end of the project only to find that there is great concern over what was presented. Since one of the goals of the Class EA process is to consult with stakeholders, there are still opportunities to receive comments and concerns after the July 21st date. As Reg and I said during our meeting with you, we foresee there is mutual benefit in what the Baxter Creek Watershed Alliance is doing and what the Township hopes to do with the Master Servicing Study and the other subsequent projects and further investigations. So we foresee future correspondences between the various parties even after the July 21st timeline.]

We want to ensure our questions and comments are fact-based and as accurate as possible before committing them to the process and public record.

If you can advise on opportunities for process that would be helpful. We could consider a meeting prior to or just after submitting our files.

Many thanks,

Craig

Craig Onafrychuk
Secretary-Director
Baxter Creek Watershed Alliance
www.baxtercreekwatershed.org
705-761-0619

R.V. Anderson Associates Limited has been engaged in the provision of professional engineering, operations, and management services since 1948. This message is intended only for the use of the individual(s) to whom it is addressed. If you are not the intended recipient(s), disclosure, copying, distribution and use are prohibited; please notify us immediately and delete this email from your systems. Please see http://www.rvanderson.com for Copyright and Terms of Use.

Correspondence After Notice of Commencement

~

Public Members

Nikash Persaud

To: Rika Law
Subject: RE: Cavan Monaghan Class EA Question [redacted]

From: [redacted]
Sent: August 30, 2021 8:00 AM
To: Rika Law <rlaw@rvanderson.com>
Cc: [redacted]
Subject: RE: Cavan Monaghan Class EA Question

Hi Rika:

Hope you also had a wonderful weekend!

Since this Class EA will have a significant impact on the local community and its future, it is hoped that any public information meeting will wait until it can be conducted in person and hands-on. I have found that zoom meetings are usually not very well-attended and not a suitable platform to share information or answer questions.

Yes… please do add me to the stakeholder list.

Thank you,

[redacted]

From: Rika Law [mailto:rlaw@rvanderson.com]
Sent: Friday, August 27, 2021 4:18 PM
To: [redacted]
Cc: Wayne Hancock
Subject: RE: Cavan Monaghan Class EA Question

Dear [redacted]

It has been awhile since our last correspondence. We hope this email finds you well.

Thank you for reaching out and for your interest in the project. The public information centre has not occurred yet. We apologize that the project schedule has been set back due to COVID, however we are working hard to get the project moving along.

The public information centre is currently planned for later this year/early next year. The format of the public information centre is still being considered by the team, given the constantly changing COVID situation. As the time draws closer, we will be issuing a Notice of Public Information Centre to interested stakeholders with more details about the date/time, format and relevant information that is available.

Please advise if you would like to be added to the stakeholder list to receive future project notices via email.

Have a lovely weekend

Rika Law, P.Eng., PMP (preferred pronouns: she/her)
PROJECT MANAGER, ASSOCIATE

t 416 497 8600 ext. <1209>
a 2001 Sheppard Avenue East, Suite 300, Toronto, ON M2J 4Z8

rvanderson.com

SUMMER HOURS: RVA celebrates the summer season from June 4th to September 3rd. Our offices will be closed at 2 PM each Friday.

From: [redacted]
Sent: August 24, 2021 9:00 AM
To: Rika Law <rlaw@rvanderson.com>
Cc: [redacted]
Subject: Cavan Monaghan Class EA Question

[CAUTION EXTERNAL EMAIL] Make Sure that it is legitimate **before** Replying or Clicking on any links

Good morning Rika:

Originally it was announced by Cavan Monaghan Council that R.V. Anderson Associates had been retained to complete a 'review' of current and possibly future water and wastewater resources within the township. I had no idea that this 'review', instead, is a Class EA. The notice below indicates that a public meeting was tentatively scheduled for the spring of 2021, but that has not occurred.

When is a public meeting anticipated? And will all documents, reports, studies etc. be made available to the public before the public meeting?

I look forward to your response.

Thank you,

[redacted]

Water and Wastewater Master Servicing Plan Notice of Commencement Class Environmental Assessment

Water and Wastewater Master Servicing Plan Notice of Commencement Class Environmental Assessment - Township of Cavan Monaghan

The Township of Cavan Monaghan is undertaking a Water and Wastewater Master Servicing Plan addressing Phases 1 and 2 of the Municipal Class Environmental Assessment (Class EA), June 2000, as amended in 2015. The Master Plan is intended to follow “Approach 1” of the Class EA, a process that will be done at a broad level of assessment to identify a conceptual plan for water and wastewater servicing in the Township. The project is intended to address Township improvement and growth opportunities, considering this in the context of the Township of Cavan Monaghan Official Plan.

Most of the existing Millbrook settlement area has municipal water and wastewater services while hamlets (including Cavan, Ida, Mount Pleasant, Springville, Fraserville and South Monaghan) are typically on private wells and septic systems. The master plan will consider and examine alternatives and viability to provide water and wastewater servicing to the entire Millbrook community. This includes expanding services to areas within the settlement boundary and possibly beyond, if financially worthwhile. It will identify the preferred drinking water supply, storage and distribution alternative and the preferred wastewater treatment and sanitary sewage collection alternative to prepare for the next 10 years and for long term vision.

Interested persons are encouraged to bring comments and concerns to the Township at any time during this process and to identify their interest in being added to the project mailing list. A Public Information Meeting will be held as part of the study at which Township staff and their consultants will be available to provide information and answer questions regarding the project. The public meeting is tentatively scheduled for Spring 2021.
If you have any questions or comments or require any information about the study or the Municipal Class Environment Assessment process, you are invited to contact the persons listed below

Township of Cavan Monaghan
Public Works
Mr. Wayne Hancock, P.Eng.
Director of Public Works
988 County Road 10
Millbrook, Ontario, L0A 1G0
Tel: (705) 932-9327
Fax: (705) 932-3458
whancock@cavanmonaghan.net

R.V. Anderson Associates Limited
Ms. Rika Law, P.Eng., PMP
2001 Sheppard Avenue East,
Suite 300
Toronto, ON, M2J 4Z8
Tel: (416) 497-8600 ext. 1209
rlaw@rvanderson.com

This notice was first issued on November 2, 2020

Additional links:

Nexicom Email Protection has detected a possible fraud attempt from "hes32-ctp.trendmicro.com:443" claiming to be Water and Wastewater Master Servicing Plan (cavanmonaghan.net)

Water and Wastewater Master Servicing Plan - Township of Cavan Monaghan

R.V. Anderson Associates Limited has been engaged in the provision of professional engineering, operations, and management services since 1948. This message is intended only for the use of the individual(s) to whom it is addressed. If you are not the intended recipient(s), disclosure, copying, distribution and use are prohibited; please notify us immediately and delete this email from your systems. Please see http://www.rvanderson.com for Copyright and Terms of Use.

Nikash Persaud

To: Rika Law
Subject: RE: CM Future Water & Wastewater Servicing Presentation - Questions

From: [redacted]
Sent: Tuesday, April 25, 2023 9:52 AM
To: Rika Law <rlaw@rvanderson.com>
Subject: RE: CM Future Water & Wastewater Servicing Presentation - Questions

I look forward to your response.

This information is also not included in the presentation.. from the July 26, 2018 Watson Report to Council, that included the Turner Street application It also included the proposal/application for 18 semi-detached, 15 Townhomes and 18 apartments on a site at the end of Centre Street

The proposed development for Centre Street provides an extension of the current Centre Street to the west which will curve north and end in a cul-de-sac.

And in addition another development on King Street..

Additionally, a 3-storey condominium apartment building will be constructed on King Street West (on the north side), west of Cavan Street. The proposed development will include 18 semi-detached homes, 15 townhomes, and 18 apartment units. The semi-detached homes will be on 18 and 21 metre lots. The apartment units are proposed to be condominium owned.

[redacted]

From: Rika Law [mailto:rlaw@rvanderson.com]
Sent: Thursday, April 13, 2023 6:47 PM
To: [redacted]
Subject: RE: CM Future Water & Wastewater Servicing Presentation - Questions

Dear [redacted]

Thank you for your continued care for the community and interest in the project.

We will review your questions with the Township and will provide a response.

Thanks

Rika Law, P.Eng., PMP (she / her)
Team Lead, Principal

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300, Toronto ON M2J 4Z8
t 416 497 8600 ext. 1209 |
LinkedIn | Facebook | Website

From: [redacted]
Sent: Thursday, April 13, 2023 10:14 AM
To: Rika Law <rlaw@rvanderson.com>
Cc: [redacted]
Subject: CM Future Water & Wastewater Servicing Presentation - Questions

[CAUTION EXTERNAL EMAIL] Make Sure that it is legitimate **before** Replying or Clicking on any links

HI Rika:

I watched your recent presentation to Cavan Monaghan on the future of water and wastewater servicing.

I do have a couple of questions that I hope you might be able to answer …

First… about the information in this slide:

Towerhill North: 718 Units (draft approved 2021)
Nina Court/Coldbrook Drive: 31 units (draft approved 2020)
Vargas: 266 units w/ commercial (3rd resubmission, MZO 2022)
CSU: 611 units w/ commercial (3rd resubmission, MZO 2022)
Total # of units:
• Draft approved, 749 units
• In submission, 877 units
• Total = 1,626 units

There is an application that has been submitted to the County - Turner Street Subdivision Application 15T-19002 for 85 Units within Millbrook. In your previous presentation it was also noted that a 192 residential unit for Duke Street in Millbrook was 'active'. These 2 subdivision applications are not listed in the current presentation. Are these 2 subdivisions now inactive?

Second question.
The lands that once housed the Millbrook correctional facility and groundwater are contaminated. It was discovered that a plume of PCE (tetrachloroethylene) flows in the direction of the aquifer that provides the Millbrook municipal water supply. There have been several studies by the property owner IO and peer reviews by Cambium for CM. The contamination threat has not yet been resolved. None of the studies address if there will be impacts to the aquifer and/or the contaminated groundwater flow by the increased drawdown of the aquifer… will this be something that will be investigated? What is the expected drawdown of the Millbrook aquifer for the 1626 units?

As always, look forward to your response,

[redacted]

R.V. Anderson Associates Limited has been engaged in the provision of professional engineering, operations, and management services since 1948. This message is intended only for the use of the individual(s) to whom it is addressed. If you are not the intended recipient(s), disclosure, copying, distribution and use are prohibited; please notify us immediately and delete this email from your systems. Please see http://www.rvanderson.com for Copyright and Terms of Use.

Nikash Persaud

To: Rika Law
Subject: RE: RE: CM Future Water & Wastewater Servicing Presentation - request for in person meeting

From: Rika Law
Sent: Wednesday, May 31, 2023 5:18 PM
To: [redacted]
Cc: randres@rjandres.com
Subject: RE: CM Future Water & Wastewater Servicing Presentation - request for in person meeting

Dear [redacted]

Thank you for your continued interest in this project. For your information, a public meeting is being planned for the end of June to seek public input for the master servicing required to support Millbrook's community plans. In view of your interest and the questions you have, we want to ask if you would entertain a brief in-person discussion with us prior to the planned public meeting to help us better understand your perspectives and to provide you with some preliminary information with respect to your questions.

Reg Andres and I are planning to come to Millbrook next week. Please let us know if any of the following dates and times work for you:

- Tues June 6th 10-11 am
- Wednesday June 7th 10-11 am
- Thurs June 8th 10-11 am

If it is convenient, we can meet at a local coffee shop or café in Millbrook.

Regardless, you will receive a formal Notice of Public Information Centre in the next few days since you are on the stakeholder list.

Thanks

Rika Law, P.Eng., PMP (she/her)
Team Lead, Principal

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300, Toronto ON M2J 4Z8
t 416 497 8600 ext. 1209
LinkedIn | Facebook | Website

SUMMER HOURS NOTICE: RVA offices will be closed each Friday from June 2nd to September 8th as we celebrate the summer season. We will be available for project and construction related matters. For urgent requests, please contact office number.

Out of Office & Vacation notices: I will be out of the office for conferences and vacation for the week of June 12-16, 2023 (inclusive) and June 26-30, 2023 (inclusive). Please coordinate your project needs with me and/or the associated project coordinator in advance.

Correspondence After Notice of Public Information Centre

~

Agencies

Nikash Persaud

From: Barboza, Karla (MCM) <Karla.Barboza@ontario.ca>
Sent: June 5, 2023 2:46 PM
To: Dania Chehab
Cc: whancock@cavanmonaghan.net; Minkin, Dan (MHSTCI); Carol Derrick
Subject: MCM Response: Cavan Monaghan - Notice of PIC [MCM File 0013643]
Attachments: 20230601-Cavan Monaghan MSS - Notice of PIC 1.pdf; 2023-06-05 CavanMonaghanWaterWastewater_MCM InitialComments.pdf

[CAUTION EXTERNAL EMAIL] Make Sure that it is legitimate **before** Replying or Clicking on any links

Hi Dania,
This PIC Notice was forwarded to the Ministry of Citizenship and Multiculturalism (MCM).
Please note that the responsibility for administration of the Ontario Heritage Act and matters related to cultural heritage have been transferred from the Ministry of Tourism, Culture and Sport (MTCS) to the Ministry of Citizenship and Mul culturalism (MCM). Individual staff roles and contact information remain unchanged. Please continue to send any notices, report and/or documentation to both Dan Minkin and myself. You can remove Kimberly Livingstone as she is no longer with this ministry.

- Karla Barboza, Team Lead - Heritage | Heritage Planning Unit (Citizenship and Multiculturalism) | 416-660-1027 | karla.barboza@ontario.ca
- Dan Minkin, Heritage Planner | Heritage Planning Unit (Citizenship and Multiculturalism) | 416-786-7553 | dan.minkin@ontario.ca

I also attached our initial comments on this Master Servicing Plan.

For future projects, please send the initial notice to me. You may also want to contact the Ministry of the Environment, Conservation and Parks for an updated Government Review Team List at 416-314-8001 or 1-800-461-6290.

Please continue to do so through the master plan process and contact us for any questions or clarification.

Sincerely,

Karla

Karla Barboza, RPP, MCIP, CAHP
Team Lead, Heritage | Heritage Planning Unit | **Ministry of Citizenship and Multiculturalism** | 416-660-1027 | karla.barboza@ontario.ca

---

From: Carol Derrick <cderrick@rvanderson.com>
Sent: June 5, 2023 10:12 AM
To: Livingstone, Kimberly (MMAH) <Kimberly.Livingstone@ontario.ca>
Subject: R205371-20230605 - Cavan Monaghan - Notice of PIC

Good morning,

On behalf of the Township of Cavan Monaghan, please see attached the Notice of Public Information Centre for the Township of Cavan Monaghan Water and Wastewater Master Servicing Plan Municipal Class Environmental Assessment.

This notice is sent to your attention as it was deemed that you may be an interested stakeholder.

Should you wish to stop receiving notices pertaining to this project or would like to direct it to alternate recipient, please advise the undersigned.

Yours very truly,

R.V. Anderson Associates Limited
Dania Chehab, P.Eng., ENV SP
Project Manager
dchehab@rvanderson.com

R.V. Anderson Associates Limited has been engaged in the provision of professional engineering, operations, and management services since 1948. This message is intended only for the use of the individual(s) to whom it is addressed. If you are not the intended recipient(s), disclosure, copying, distribution and use are prohibited; please notify us immediately and delete this email from your systems. Please see http://www.rvanderson.com for Copyright and Terms of Use.

Ministry of Citizenship and Multiculturalism

Heritage Planning Unit
Heritage Branch
Citizenship, Inclusion and Heritage Division
5th Flr, 400 University Ave
Tel.: 416-660-1027

Ministère des Affaires civiques et du Multiculturalisme

Unité de la planification relative au patrimoine
Direction du patrimoine
Division des affaires civiques, de l'inclusion et du patrimoine
Tél.: 416-660-1027

Ontario

June 5, 2023 EMAIL ONLY

Dania Chehab, P.Eng., ENV SP
R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Unit 300
Toronto, ON M2J 4Z8
Email dchehab@rvanderson.com

MCM File	**:**	**0013643**
Proponent	**:**	**Water and Wastewater Master Servicing Plan**
Subject	**:**	**Notice of Public Information Centre - Master Plan Approach #1**
Project	**:**	**Water and Wastewater Master Servicing Plan**
Location	**:**	**Township of Cavan Monaghan - Peterborough County**

Dear Dania Chehab:

Thank you for providing the Ministry of Citizenship and Multiculturalism (MCM) with the Notice of Public Information Centre for this project.

MCM's interest in this master plan relates to its mandate of conserving Ontario's cultural heritage, which includes archaeological resources, built heritage resources and cultural heritage landscapes.

MCM understands that master plans are long range plans which integrate infrastructure requirements for existing and future land use with environmental assessment planning principles. The Municipal Class Environmental Assessment (MCEA) outlines a framework for master plan and associated studies which should recognize the planning and design Process of this Class EA, and should incorporate the key principles of successful environmental assessment planning identified in Section A.1.1. The master planning process will, at minimum, address Phases 1 and 2 of the Planning and Design Process of the MCEA.

This letter provides advice on how to incorporate consideration of cultural heritage in the above-mentioned master planning process by outlining the technical cultural heritage studies and the level of detail required to address cultural heritage in master plans. In accordance with the MCEA, cultural heritage resources should be identified early in the process in order to determine known and potential resources and potential impacts.

Master Plan Summary
The Township of Cavan Monaghan is undertaking a Master Servicing Study (MSS) for Water and Wastewater under the framework of Master Plan Approach #1 within the Municipal Class Environmental Assessment (MCEA) Process.

This MSS will identify a high level, conceptual plan for water and wastewater servicing in the Township of Cavan Monaghan to address Township improvement and growth opportunities in the context of the Township of Cavan Monaghan Official Plan (last amended in 2021), and the Growth Management Strategy (GMS) completed in 2022 in support of the Municipal Comprehensive Review (MCR). Most of the existing Millbrook settlement area has municipal water and wastewater services while hamlets (including Cavan, Ida, Mount Pleasant, Springville, Fraserville and South Monaghan) are typically on private wells and septic systems. The MSS study area is focused on the Millbrook settlement area, in line with the Township's future growth planning.

Identifying Cultural Heritage Resources
MCM understands that the master plan would typically be done at a broad level of assessment thereby requiring more detailed investigations at the project-specific level. Therefore, a description of the existing conditions related to cultural heritage resources needs to be included in the master plan document.

Archaeological Resources
The existing conditions sub-section should indicate if the master plan includes areas of archaeological potential or not and acknowledge that archaeological assessments will be required for future project-specific projects. The proponents should refer to an archaeological management plan or a data sharing agreement, should they exist. In their absence, the Ministry's screening checklists can help determine whether archaeological assessments will be needed for subsequent project undertakings: *Criteria for Evaluating Archaeological Potential* and *Criteria for Evaluating Marine Archaeological Potential*.

A statement should be included that archaeological assessments are to be undertaken by an archaeologist licensed under the *Ontario Heritage Act* and that archaeological assessment reports must be submitted for MCM review prior to the completion of the environmental assessment and prior to any ground disturbance. Some municipalities may also elect to have a Stage 1 archaeological assessment undertaken for a master plan area.

Built Heritage Resources and Cultural Heritage Landscapes
MCM recommends that an Existing Conditions Report be undertaken by a qualified person, which will include a historical summary of the study area's development, identifying all known or potential built heritage resources and cultural heritage landscapes within the study area. The findings of the existing conditions report should be included in the existing conditions subsection of the master plan document.

Community input should be sought to identify locally recognized and potential cultural heritage resources. Sources include, but are not limited to, Municipal Heritage Committees, community heritage registers, historical societies and other local heritage organizations.

Cultural heritage resources are often of critical importance to Indigenous communities. Indigenous communities may have knowledge that can contribute to the identification of cultural heritage resources, and any engagement with Indigenous communities should include a discussion about known or potential cultural heritage resources that are of value to them.

Subsequent Municipal Class EA Undertakings

The recommendations outlined above can be used in support of any future technical cultural heritage studies required for any Schedule B and C MCEA undertakings identified within the master planning area.

Technical cultural heritage studies are to be undertaken by a qualified person who has expertise, recent experience, and knowledge relevant to the type of cultural heritage resources being considered and the nature of the activity being proposed. Please advise MCM whether any technical cultural heritage studies will be completed for this master plan and provide them to MCM before issuing a Notice of Completion.

Please note that the responsibility for administration of the *Ontario Heritage Act* and matters related to cultural heritage have been transferred from the Ministry of Tourism, Culture and Sport (MTCS) to the Ministry of Citizenship and Multiculturalism (MCM). Individual staff roles and contact information remain unchanged. Please continue to send any notices, report and/or documentation to both Dan Minkin and myself.

- Karla Barboza, Team Lead - Heritage | Heritage Planning Unit (Citizenship and Multiculturalism) | 416-660-1027 | karla.barboza@ontario.ca
- Dan Minkin, Heritage Planner | Heritage Planning Unit (Citizenship and Multiculturalism) | 416-786-7553 | dan.minkin@ontario.ca

Thank you for consulting MCM on this project. Please continue to do so through the master plan process and contact us for any questions or clarification.

Sincerely,

Karla Barboza
Team Lead, Heritage
karla.barboza@ontario.ca

Copied to: Wayne Hancock, Township of Cavan Monaghan whancock@cavanmonaghan.net
Dan Minkin, Heritage Planner, MCM dan.minkin@ontario.ca

It is the sole responsibility of proponents to ensure that any information and documentation submitted as part of their EA report or file is accurate. The Ministry of Citizenship and Multiculturalism (MCM) makes no representation or warranty as to the completeness, accuracy or quality of the any checklists, reports or supporting documentation submitted as part of the EA process, and in no way shall MCM be liable for any harm, damages, costs, expenses, losses, claims or actions that may result if any checklists, reports or supporting documents are discovered to be inaccurate, incomplete, misleading or fraudulent.

Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48(1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out an archaeological assessment, in compliance with Section 48(1) of the *Ontario Heritage Act*.

The *Funeral, Burial and Cremation Services Act, 2002, S.O. 2002, c.33* requires that any person discovering human remains must cease all activities immediately and notify the police or coroner. If the coroner does not suspect foul play in the disposition of the remains, in accordance with *Ontario Regulation 30/11* the coroner shall notify the Registrar, Ontario Ministry of Public and Business Service Delivery, which administers provisions of that Act related to burial sites. In situations where human remains are associated with archaeological resources, the Ministry of Citizenship and Multiculturalism should also be notified (at archaeology@ontario.ca) to ensure that the archaeological site is not subject to unlicensed alterations which would be a contravention of the *Ontario Heritage Act*.

Nikash Persaud

From: Berube, Margaret (MNRF) <Margaret.Berube@ontario.ca>
Sent: June 5, 2023 1:11 PM
To: Carol Derrick
Cc: Hartman, Gillian (MNRF)
Subject: FW: R205371-20230605 - Cavan Monaghan - Notice of PIC
Attachments: 20230601-Cavan Monaghan MSS - Notice of PIC 1.pdf

[CAUTION EXTERNAL EMAIL] Make Sure that it is legitimate **before** Replying or Clicking on any links

Hello,

I am forwarding your email to Gillian Hartman, cc'd.

Thank you,

Margaret

Margaret Bérubé, Management Biologist
Ministry of Natural Resources and Forestry, Peterborough District
300 Water Street, 1st Floor South Tower – Peterborough, ON – K9J 3C7
Ph: 705-772-9824, Fax: (705) 755-3125

Please Note: As part of providing accessible customer service, please let me know if you have any accommodation needs or require communication supports or alternate formats.

From: Carol Derrick <cderrick@rvanderson.com>
Sent: June 5, 2023 10:11 AM
To: Berube, Margaret (MNRF) <Margaret.Berube@ontario.ca>
Subject: R205371-20230605 - Cavan Monaghan - Notice of PIC

Good morning,

On behalf of the Township of Cavan Monaghan, please see attached the Notice of Public Information Centre for the Township of Cavan Monaghan Water and Wastewater Master Servicing Plan Municipal Class Environmental Assessment.

This notice is sent to your attention as it was deemed that you may be an interested stakeholder.

Should you wish to stop receiving notices pertaining to this project or would like to direct it to alternate recipient, please advise the undersigned.

Yours very truly,

R.V. Anderson Associates Limited

Dania Chehab, P.Eng., ENV SP
Project Manager
dchehab@rvanderson.com

R.V. Anderson Associates Limited has been engaged in the provision of professional engineering, operations, and management services since 1948. This message is intended only for the use of the individual(s) to whom it is addressed. If you are not the intended recipient(s), disclosure, copying, distribution and use are prohibited; please notify us immediately and delete this email from your systems. Please see http://www.rvanderson.com for Copyright and Terms of Use.

Nikash Persaud

From: Crinklaw, Drew (OMAFRA) <Drew.Crinklaw@ontario.ca>
Sent: June 5, 2023 11:44 AM
To: Carol Derrick
Subject: RE: R205371-20230605 - Cavan Monaghan - Notice of PIC

[CAUTION EXTERNAL EMAIL] Make Sure that it is legitimate **before** Replying or Clicking on any links

Hi Carol, please be advised that I do not cover the Township of Cavan Monaghan on behalf of OMAFRA.

You can find a map of our current Rural Planner geographical coverage and contact information here.

Additionally, you may choose to send EA notices to our generic email address: omafra.eanotices@ontario.ca.

Please update your mailing list accordingly.

Thank-you,
Drew Crinklaw
Policy Advisor
Land Use Policy & Stewardship Unit
Ontario Ministry of Agriculture, Food & Rural Affairs
W: 519-317-4493
As part of providing accessible customer service, please let me know if you have any accommodation needs and/or would like access to communication supports or alternate formats.

From: Carol Derrick <cderrick@rvanderson.com>
Sent: Monday, June 05, 2023 10:13 AM
To: Crinklaw, Drew (OMAFRA) <Drew.Crinklaw@ontario.ca>
Subject: R205371-20230605 - Cavan Monaghan - Notice of PIC

Good morning,

On behalf of the Township of Cavan Monaghan, please see attached the Notice of Public Information Centre for the Township of Cavan Monaghan Water and Wastewater Master Servicing Plan Municipal Class Environmental Assessment.

This notice is sent to your attention as it was deemed that you may be an interested stakeholder.

Should you wish to stop receiving notices pertaining to this project or would like to direct it to alternate recipient, please advise the undersigned.

Yours very truly,

R.V. Anderson Associates Limited
Dania Chehab, P.Eng., ENV SP
Project Manager
dchehab@rvanderson.com

R.V. Anderson Associates Limited has been engaged in the provision of professional engineering, operations, and management services since 1948. This message is intended only for the use of the individual(s) to whom it is addressed. If you are not the intended recipient(s), disclosure, copying, distribution and use are prohibited; please notify us immediately and delete this email from your systems. Please see http://www.rvanderson.com for Copyright and Terms of Use.

Correspondence After Notice of Public Information Centre

~

Organizations

Nikash Persaud

To: Rika Law
Subject: RE: Copy of Notice For Public Information Center for Master Servicing Study

From: Wayne Hancock <whancock@cavanmonaghan.net>
Sent: Tuesday, May 30, 2023 3:18 PM
To: Council Members <CouncilMembers@cavanmonaghan.net>
Cc: Yvette Hurley <yhurley@cavanmonaghan.net>; Cindy Page <cpage@cavanmonaghan.net>; John Connolly <jconnolly@cavanmonaghan.net>; Karen Ellis <kellis@cavanmonaghan.net>; Jessica Fradley <jfradley@cavanmonaghan.net>; Rika Law <rlaw@rvanderson.com>; Dania Chehab <dchehab@rvanderson.com>; Chris Manduca <cmanduca@cavanmonaghan.net>; Drew Hutchison <dhutchison@cavanmonaghan.net>; Brigid Ayotte <bayotte@cavanmonaghan.net>; Bill Balfour <bbalfour@cavanmonaghan.net>; Kyle Phillips <kphillips@cavanmonaghan.net>; Chris Allison <callison@cavanmonaghan.net>
Subject: Re: Copy of Notice For Public Information Center for Master Servicing Study

[CAUTION EXTERNAL EMAIL] Make Sure that it is legitimate **before** Replying or Clicking on any links

To Council,
Please note the date and time of the public information center for our water/wastewater master servicing study. Please join us.
Thanks Wayne

Nikash Persaud

From: Rika Law
Sent: May 31, 2023 7:00 PM
To: graham.whitelaw@gmail.com; conafrychuk@hotmail.com
Cc: John Connolly; Wayne Hancock; randres@rjandres.com; Dania Chehab; Matthew Grekula
Subject: Cavan Monaghan Water & Wastewater Master Servicing Study

Hi Graham and Craig

The Township and our Class Environmental Assessment project team met today regarding the Cavan Monaghan Water & Wastewater Master Servicing Study to prepare for the upcoming Public Information Centre happening on June 21st. John Connolly (Township) noted that they had productive discussions with the Baxter Creek Watershed Alliance on various topics and suggested that we reach out to you.

A project team member and I are planning to visit Millbrook sometime next week and wanted to see if it would be mutually convenient to meet in person to allow us to introduce ourselves to you and have a quick chat about the project while we're in town. We are in the midst of finalizing the date and time of our visit and can update you when we know better.
Alternatively, we can set up a virtual call to introduce ourselves. Please let us know if you're interested.

In addition, please advise if you wish to be added to the project stakeholder list so that you receive upcoming project notices for the Cavan Monaghan Water & Wastewater Master Servicing Study.

Thanks

Rika Law, P.Eng., PMP (she/her)
Team Lead, Principal

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300, Toronto ON M2J 4Z8
t 416 497 8600 ext. 1209
LinkedIn | Facebook | Website

Correspondence After Notice Public Information Centre

~

Indigenous Communities

Nikash Persaud

From: Tom Cowie <tcowie@hiawathafn.ca>
Sent: June 5, 2023 11:09 AM
To: Carol Derrick
Cc: Sean Davison
Subject: RE: R205371-20230605 - Cavan Monaghan - Notice of PIC

[CAUTION EXTERNAL EMAIL] Make Sure that it is legitimate **before** Replying or Clicking on any links

Aaniin Carol,

Chi Miigwech for the update on Wastewater and Water Servicing Plan MCEA PIC.

Gichi manaadendamowin

Tom Cowie

Tom Cowie
Lands/Resources Consultation
Hiawatha First Nation
431 Hiawatha Line,
Hiawatha, On
K9J 0E6
705 295-4421 Ext. 216
Email tcowie@hiawathan.ca

We, the Michi Saagiig of Hiawatha First Nation, are a vibrant, proud, independent and healthy people balanced in the richness of our culture and traditional way of life

---

From: Carol Derrick <cderrick@rvanderson.com>
Sent: Monday, June 5, 2023 10:28 AM
To: Donna Paudash <dpaudash@HiawathaFN.ca>
Cc: inquiries@williamstreatiesfirstnations.ca
Subject: R205371-20230605 - Cavan Monaghan - Notice of PIC

ALERT: This message originated outside of HFN's network. **BE CAUTIOUS** before clicking any link or attachment.

Good morning,

On behalf of the Township of Cavan Monaghan, please see attached the Notice of Public Information Centre for the Township of Cavan Monaghan Water and Wastewater Master Servicing Plan Municipal Class Environmental Assessment.

This notice is sent to your attention as it was deemed that you may be an interested stakeholder.

Should you wish to stop receiving notices pertaining to this project or would like to direct it to alternate recipient, please advise the undersigned.

Yours very truly,

R.V. Anderson Associates Limited
Dania Chehab, P.Eng., ENV SP
Project Manager
dchehab@rvanderson.com

R.V. Anderson Associates Limited has been engaged in the provision of professional engineering, operations, and management services since 1948. This message is intended only for the use of the individual(s) to whom it is addressed. If you are not the intended recipient(s), disclosure, copying, distribution and use are prohibited; please notify us immediately and delete this email from your systems. Please see http://www.rvanderson.com for Copyright and Terms of Use.

Nikash Persaud

From: Laura Desaulniers <LauraD@metisnation.org>
Sent: June 5, 2023 2:49 PM
To: Carol Derrick; Dania Chehab
Subject: FW: R205371-20230605 - Cavan Monaghan - Notice of PIC
Attachments: 20230601-Cavan Monaghan MSS - Notice of PIC 1.pdf

[CAUTION EXTERNAL EMAIL] Make Sure that it is legitimate **before** Replying or Clicking on any links

Hello,

My name is Laura and I work for the Metis Nation of Ontario as the Lands, Resources and Consultations Branch Coordinator. I also distribute notifications to the Consultation Committees in regions 6, 8 & 9. President Christa Lemelin has forwarded me this notification you sent. Going forward please send all correspondence to our consultations inbox at consultations@metisnation.org this is where they will get sorted and distributed to the regional consultation committees. Thank you for your notification and if you have any questions please do not hesitate to ask.

Kind Regards,
Laura Desaulniers (she/her)
Lands, Resources & Consultations (LRC) Branch Coordinator
Métis Nation of Ontario
Thunder Bay, ON
E: Laurad@metisnation.org
C: 807-375-0208
W: www.metisnation.org

---------- Forwarded message ---------
From: **Carol Derrick** <cderrick@rvanderson.com>
Date: Mon, Jun 5, 2023 at 10:23 AM
Subject: R205371-20230605 - Cavan Monaghan - Notice of PIC
To: clemelin22@gmail.com <clemelin22@gmail.com>
Cc: contactus@metisnation.org <contactus@metisnation.org>

Good morning,

On behalf of the Township of Cavan Monaghan, please see attached the Notice of Public Information Centre for the Township of Cavan Monaghan Water and Wastewater Master Servicing Plan Municipal Class Environmental Assessment.

This notice is sent to your attention as it was deemed that you may be an interested stakeholder.

Should you wish to stop receiving notices pertaining to this project or would like to direct it to alternate recipient, please advise the undersigned.

Yours very truly,

R.V. Anderson Associates Limited

Dania Chehab, P.Eng., ENV SP

Project Manager

dchehab@rvanderson.com

R.V. Anderson Associates Limited has been engaged in the provision of professional engineering, operations, and management services since 1948. This message is intended only for the use of the individual(s) to whom it is addressed. If you are not the intended recipient(s), disclosure, copying, distribution and use are prohibited; please notify us immediately and delete this email from your systems. Please see http://www.rvanderson.com for Copyright and Terms of Use.

Attention: This email originated from outside the **MNO**. Please use caution when clicking links, opening attachments or replying to requests for account information or funds.

Nikash Persaud

From: Algonquins of Ontario Consultation Office <algonquins@tanakiwin.com>
Sent: June 6, 2023 12:20 PM
To: Carol Derrick
Cc: Dania Chehab
Subject: RE: R205371-20230605 - Cavan Monaghan - Notice of PIC

[CAUTION EXTERNAL EMAIL] Make Sure that it is legitimate **before** Replying or Clicking on any links

Thank you for contacting the Algonquins of Ontario Consultation Office in relation to the **Township of Cavan Monaghan Water and Wastewater Master Servicing Plan Municipal Class Environmental Assessment**. Please note that this office has determined that your project is not located within the unceded Algonquins of Ontario Settlement Area.

Requests such as this may impact the rights of other Indigenous groups. As such, we recommend that you contact the appropriate community responsible for the area in question.

This message may not be relied upon to fulfil, in whole or part, any duty to consult with the Algonquins of Ontario or any other Aboriginal organization.

Sincerely,

The Algonquins of Ontario Consultation Office

31 Riverside Drive, Suite 101
Pembroke, ON K8A 8R6
Phone: 613-735-3759 Ex. 200
Fax: 613-735-6307
Email: algonquins@tanakiwin.com
Website: www.tanakiwin.com

From: Carol Derrick <cderrick@rvanderson.com>
Sent: Monday, June 5, 2023 10:13 AM
To: Algonquins of Ontario Consultation Office <algonquins@tanakiwin.com>
Subject: R205371-20230605 - Cavan Monaghan - Notice of PIC

Good morning,

On behalf of the Township of Cavan Monaghan, please see attached the Notice of Public Information Centre for the Township of Cavan Monaghan Water and Wastewater Master Servicing Plan Municipal Class Environmental Assessment.

This notice is sent to your attention as it was deemed that you may be an interested stakeholder.

Should you wish to stop receiving notices pertaining to this project or would like to direct it to alternate recipient, please advise the undersigned.

Yours very truly,

R.V. Anderson Associates Limited
Dania Chehab, P.Eng., ENV SP
Project Manager
dchehab@rvanderson.com

R.V. Anderson Associates Limited has been engaged in the provision of professional engineering, operations, and management services since 1948. This message is intended only for the use of the individual(s) to whom it is addressed. If you are not the intended recipient(s), disclosure, copying, distribution and use are prohibited; please notify us immediately and delete this email from your systems. Please see http://www.rvanderson.com for Copyright and Terms of Use.

Correspondence After Notice of Public Information Centre

~

Public Members

Nikash Persaud

To: Rika Law
Subject: RE: CM Future Water & Wastewater Servicing Presentation - Meetig Thank You & Documents

-----Original Message-----
From: [redacted]
Sent: Friday, June 9, 2023 3:07 PM
To: Rika Law <rlaw@rvanderson.com>
Cc: [redacted]
Subject: RE: CM Future Water & Wastewater Servicing Presentation - Meetig Thank You & Documents

[CAUTION EXTERNAL EMAIL] Make Sure that it is legitimate before Replying or Clicking on any links

Thank you Rika, I did receive your email and will look forward to seeing you at the open house. Yes, I would like to be added to the stakeholder list.

Have a great weekend

[redacted]

From: Rika Law [mailto:rlaw@rvanderson.com]
Sent: June 9, 2023 12:04 PM
To: [redacted]
Subject: FW: CM Future Water & Wastewater Servicing Presentation - Meetig Thank You & Documents

Dear [redacted]

Just trying to send this email along again as I received an email notice that the original email delivery failed.

Please confirm receipt of this email.

Thank you! Have a lovely weekend

Rika Law, P.Eng., PMP (she/her)

Team Lead, Principal

R.V. Anderson Associates Limited

2001 Sheppard Avenue East, Suite 300, Toronto ON M2J 4Z8

From: Rika Law
Sent: Friday, June 9, 2023 10:57 AM
To: [redacted]

Cc: whancock@cavanmonaghan.net; 'John Connolly' <jconnolly@cavanmonaghan.net>; 'Karen Ellis' <kellis@cavanmonaghan.net>; Dania Chehab <dchehab@rvanderson.com>
Subject: RE: CM Future Water & Wastewater Servicing Presentation - Meetig Thank You & Documents

Dear [redacted]

Thank you for taking the time to meet with Reg and I on Wed. It was a lovely discussion and helped us to understand the local community perspective as well. Thank you for sharing your concerns with us. The Township and RVA have the same goals of sustainable growth through having sustainable, reliable and safe drinking water and wastewater servicing.

We will review the information provided and look forward to seeing you at the June 21st PIC, where you can meet the rest of the RVA project team – Dania and Matt in person. Reg will also be in attendance at that meeting.

Please advise if Marion would like to be added to the project stakeholder list to receive project notices directly to her email.

Thanks!

Rika Law, P.Eng., PMP (she/her)

Team Lead, Principal

R.V. Anderson Associates Limited

2001 Sheppard Avenue East, Suite 300, Toronto ON M2J 4Z8

From: [redacted]
Sent: Thursday, June 8, 2023 9:04 AM
To: Rika Law <rlaw@rvanderson.com <mailto:rlaw@rvanderson.com> >; Dania Chehab <dchehab@rvanderson.com <mailto:dchehab@rvanderson.com> >
Cc: whancock@cavanmonaghan.net <mailto:whancock@cavanmonaghan.net> ; 'John Connolly' <jconnolly@cavanmonaghan.net <mailto:jconnolly@cavanmonaghan.net> >; 'Karen Ellis' <kellis@cavanmonaghan.net <mailto:kellis@cavanmonaghan.net> >; [redacted]
Subject: CM Future Water & Wastewater Servicing Presentation - Meetig Thank You & Documents

[CAUTION EXTERNAL EMAIL] Make Sure that it is legitimate before Replying or Clicking on any links

Hi Rika:

A heart-felt thank you is extended to both you and Reg for the meeting invitation and the lively, informative discussion and helping us understand the process.

As promised, attached you will find the electronic copy of the list of questions we presented yesterday morning. We understand some of those questions have been answered during our chat; but we may have more to submit after the June 21st PIC.

We look forward to more discussions. If you have any questions about documentation and historical information we might be able to provide, please do not hesitate to ask. Attached also is a little history of the Millbrook wells and the Millbrook Correctional Facility which may be of interest.

Thank you again for the opportunity to discuss this very important issue of water safety, security and sustainability.

Yours truly

[redacted]

[redacted]

Nikash Persaud

To: Rika Law
Subject: RE: CM Future Water & Wastewater Servicing Presentation - Meetig Thank You & Documents

From: [redacted]
Sent: Thursday, June 8, 2023 9:04 AM
To: Rika Law <rlaw@rvanderson.com>; Dania Chehab <dchehab@rvanderson.com>
Cc: whancock@cavanmonaghan.net; 'John Connolly' <jconnolly@cavanmonaghan.net>; 'Karen Ellis' <kellis@cavanmonaghan.net>; [redacted]
Subject: CM Future Water & Wastewater Servicing Presentation - Meetig Thank You & Documents

[CAUTION EXTERNAL EMAIL] Make Sure that it is legitimate **before** Replying or Clicking on any links

Hi Rika:

A heart-felt thank you is extended to both you and Reg for the meeting invitation and the lively, informative discussion and helping us understand the process.

As promised, attached you will find the electronic copy of the list of questions we presented yesterday morning. We understand some of those questions have been answered during our chat; but we may have more to submit after the June 21st PIC.

We look forward to more discussions. If you have any questions about documentation and historical information we might be able to provide, please do not hesitate to ask. Attached also is a little history of the Millbrook wells and the Millbrook Correctional Facility which may be of interest.

Thank you again for the opportunity to discuss this very important issue of water safety, security and sustainability.

Yours truly

[redacted]

[redacted]

One. Total Number of Residential/Commercial Units Questions

From the 2023 RV Anderson presentation to CM Council
Towerhill North: 718 Units (draft approved 2021)
Nina Court/Coldbrook Drive: 31 units (draft approved 2020)
Vargas: 266 units w/ commercial (3rd resubmission, MZO 2022)
CSU: 611 units w/ commercial (3rd resubmission, MZO 2022)
Total # of units:
• Draft approved, 749 units
• In submission, 877 units
• **Total = 1,626 units**

Plus??? Turner 15T-19002 85 Units
Duke Street – 192 units
Centre St/King Street – 51 Units (Watson report July 26 2018 - 3 Storey Condo 18 units, 18 semis and 15 Townhouses
Kawartha Downs – 517 units – the Valdor Functional Servicing report originally called for 696 units to be serviced by Millbrook wells. The updated application 15CD-22002 – calls for possible part servicing by the well located at 1256 Syer Line (owned by Township)– also being considered to service Millbrook) The Kawartha Downs application also includes the need for the servicing of a casino, an entertainment complex and a 200 room, 62,840 square foot hotel.

What is the total of presumed residential and commercial units that will draw upon the Millbrook aquifer and/or the Syer Line well as proposed?

Two. Millbrook Aquifer Capacity/Security Questions

The Millbrook wells are approximately 31 m deep and constructed in a confined artesian aquifer, and have above ground heads of approximately 6 m. The available drawdown in the each of the wells is approximately 30 m.

5.4 Well Field Interference

Figure B-10 shows the water levels in the three Municipal Wells at the conclusion of the constant rate pumping test at a rate of 58.6 L/sec. In addition, this figure shows the expected drawdown in the three municipal wells using an extrapolation of the pumping test rate to match the MDD for the combined Millbrook / Fraserville system of 62.2 L/sec (or 5,374 m^3/day) at the conclusion of a continuous water taking period of 20 years. Using this conservative estimate, the mutual interference at the well field is expected to result in drawdown in the municipal wells between 7.5 m and 9.2 m (or 1.5 m to 3.2 mbgl), compared to the available drawdown of 27.4 m to 28.1 m.

Based on a water taking rate equivalent to the ADD of 31.1 L/sec continuously for 20 years, the expected drawdown in the Municipal wells is approximately 4.8 m, or 1.2 m above ground level.

- ***2009 Golder Report***

What is the current drawdown of the Millbrook aquifer? What is the anticipated drawdown for the 718 units for the Towerhill North development? What is the anticipated drawdown for 1626 plus units?

In 2016, The Township committed to building a new water tower and to eventually, tear down its existing one - Option 3 - which stated – '*remove existing water tower*'. However, the October 18, 2021 Watson report states that both water towers are required: - "*WSTs operating at 95% of both tanks, with a total storage volume of 4,230 m"*

Residents were told the old WST was going to be decommissioned but apparently that is not the case. Is there any surplus capacity in the two WST's?

The 2018 Cambium report stated: *"An additional consideration that should be made for future planning decisions regarding the allotment availability of water services in Millbrook is the fire demand. Adequate water supply should be maintained at all times in the event of a fire. The Water Supply for Public Fire Protection document (1999), as prepared by the Fire Underwriters Survey indicates that an adequate supply of water for fire protection is provided when the maximum daily rate of water consumption is coupled with the ability to supply water at a rate of 2,000 litres per minute (l/min) (2880 m3 /day), or less, for a one (1) hour fire, at the minimum. The maximum daily raw water flow throughout 2017 in Millbrook was 1002 m3 /day. Therefore, in the case of a one (1) hour fire, this would exceed the 3000 m3 /day capacity of the Millbrook DWS. "*

This report indicates there is not enough stored capacity to deal with possible fires. How much capacity will be required for the cumulative number of residential and commercial units? Will there be a need for an additional water tower?

In 2009 it was reported Millbrook used on average, 656,000 litres per day. The maximum usage at the time was 1147m3/day. To service the proposed 1037 residential units (353 Millbrook and 684 in Fraserville) , a PTTW for the Millbrook wells for an increase from the existing and still current 3000m3/day to 5374m3/day was sought.

How much water will be required to service all residential/commercial and industrial units – what is the 20 year plus expectation? What increase will be requested in a PTTW?

The Golder report speculated the aquifer may extend as far south as Carveth Drive. According the MOECC well map data there are at least 12 private wells that tap into the same aquifer.

What monitoring protocol will be in place to measure drawdown on the private wells? What contingency plans are in place if mitigation is required due to reduced or lack of water supply?

Drawdown may be a critical factor in the stability of slopes that are initially partially or totally submerged. The reduction of the water level has two effects: reduction of the stabilizing external hydrostatic pressure due to the unloading effect of removing water, and modification of the internal pore water pressure.

Has the stability of the aquifer been measured or considered? Could the aquifer collapse?

Three. Recharge Rate, Impervious Coverage and Climate Change Impact Questions

The Millbrook wells are within a significant recharge zone. According to Trent Source Protection impervious coverage within the Millbrook wellhead protection zone currently is between 1 and 8 %. Reports supporting the Turner application (15T-19002) for 85 residential units to be constructed within the wellhead zone indicate impervious coverage will be 29%. The various approved and expected subdivisions will also increase impervious coverage.

What is the annual current and historic recharge rate of the Millbrook aquifer? How will the cumulative impervious coverage impact the recharge rate of the Millbrook aquifer?

According to the 2018 MNRF report, there is "A *significant decreasing trend of ≈-9 mm or -6.4% per decade was observed in the water year maximum SWE(snow water equivalent) for the province . Trends for the secondary watersheds showed that i) negative trends dominate (78%); ii) no positive trends were significant; and iii) several watersheds had negative trends at the 90 and 95% confidence level"*

Modelling work, published by the Ministry of Natural Resources (MNR) in 2007, predicted that by mid-century much of southern Ontario will receive 10 to 20 per cent less precipitation and will experience considerable warming (of two degrees Celsius or more) during the warm season. "*These changes indicate that the risk of summer droughts will increase over the coming years. The agriculture, forestry and fisheries sectors will face major resource management challenges in adapting to these environmental shifts."*

How will overall prevailing drier and hotter conditions caused by a quickly changing climate factor into future servicing models?

Four. Hydraulic Connection to Baxter Creek Questions

In 2009, the hydraulic connection of the aquifer to Baxter Creek was confirmed by hydrogeologists Dr. David Sharpe and Dr. Marc Hinton from the Geological Survey of Canada. In 2009 it was also confirmed the proposed increase in water taking from the Millbrook wells for a proposed pipeline to service residential/commercial developments in Millbrook and Kawartha Downs could impact the flow levels of Baxter Creek, by these hydrogeologists who both spent several years mapping the watershed of the Oak Ridges Moraine.

In their words: ***"Environment Canada measurements of stream discharge in Baxter Creek at Millbrook show that sustained baseflow is high (almost 500 L/s). Therefore, Baxter creek and the valley aquifer are hydraulically connected and are effectively a common water resource. Additional pumping would probably remove groundwater that would otherwise discharge to the creek. Second, additional drawdown of water levels would likely occur in the vicinity of the***

pumping wells but the spatial extent of drawdown would be limited by Baxter creek which appears likely to be connected to the aquifer. …..A precautionary approach would consider the potential for contamination based on land uses or previous contamination within the enlarged contributing areas to the wells".

Furthermore, in the journal Geoscience Canada, Volume 29, Number 1, March 2002, Dr. David Sharpe states in his study of the Oak Ridges Moraine watershed: "*The hydrogeological framework of the Oak Ridges Moraine is more complex than previously recognized…. Regional understanding of groundwater flow systems is increasingly necessary in the Greater Toronto Area and other areas of Canada, to address the growing significance and scope of water-related issues". This paper goes on to state that "pumping of lower sediment or channel aquifers can change vertical hydraulic gradients and flow directions*". The Millbrook wells are located in a channel aquifer. The paper relates evidenced and real possibilities of channel breaching and as such, "*the presence of a breaching channel could influence the local fluxes and directions of groundwater flow and ultimately the nature and scale of potential impacts".*

Hydrologist Mark Peacock from the Ganaraska Region Conservation Authority indicated since Baxter Creek and the Millbrook wells are hydraulically connected that a Groundwater Under Direct Influence (GUDI) investigation should be undertaken**….. Has a GUDI investigation been undertaken?**

Will there be studies investigating the drawdown and its impact on surrounding surface and groundwater?
There are also numerous artesian springs and some residents rely on artesian wells. A reduction in the piezometric water level can result in the artesian spring/well to stop flowing or flow at reduced pressures. Many people rely on the artesian spring located on King Street and especially in times of crises like the prolonged blackout caused by the 2022 Derecho.
What guarantees are in place the drawdown will not impact artesian springs/wells?

Five. Watershed Plan and the Oak Ridges Moraine

In 2009 six hydrogeologists/hydrologists - Dr. Alphonso Rivera, Chief Hydrogeologist, Geological Survey of Canada; Dr. David Sharpe, Geological Survey of Canada; Dr. Marc Hinton, Geological Survey of Canada, Dr. Jim Buttle, Trent University; David Webster, Ministry of Natural Resources, and Mark Peacock, Ganaraska Regional Conservation Authority all stated that a watershed plan and water budget should be completed first.

"I could only recommend to you that you request a hydrogeological study of your area in order to quantify the sustainable yields and rates of the wells and of the aquifer as an ensemble." – Dr. Alphonso Rivera, Geological Survey of Canada

In 2018, the Government of Ontario also recognized the importance of Watershed Planning.
Watershed Planning in Ontario (gov.on.ca)

Two of the Millbrook wells are located within the Oak Ridges Moraine. According to the ORMCP 2001 and 2017, a watershed plan and water budget needs to be completed. To date, this has not been completed. In 2022, the County of Peterborough voted to include in its budget' '*future use to fund a watershed or subwatershed study*' for the entire region, but to date, that has not been undertaken.

ORMCP - Watershed plans 24. (1) Every upper-tier municipality and single-tier municipality shall have a watershed plan that meets the requirements of subsection (3) for every watershed whose streams originate within the municipality's area of jurisdiction. (2) The objectives and requirements of each watershed plan shall be incorporated into the municipality's official plan. (3) A watershed plan shall include, as a minimum, (a) a water budget and a water conservation plan as set out in section 25; (b) land and water use and management strategies; (c) a framework for implementation, which may include more detailed implementation plans for smaller geographic areas, such as subwatershed plans, or for specific subject matter, such as environmental management plans; (d) an environmental monitoring plan based on a minimum of five years of monitoring; (e) provisions requiring the use of environmental management practices and programs, such as programs to prevent pollution, reduce the use of pesticides and manage the use of road salt; (f) criteria for evaluating the protection of water quality and quantity, hydrological features and functions, including criteria for evaluating the impacts of proposed development and infrastructure projects within and outside the Plan Area on water quality and quantity and on hydrological features and functions(g) an evaluation of the assimilative capacity of the watershed to deal with sewage from surrounding areas; and (h) an assessment of climate change impacts on sewage and water service systems and stormwater management systems. (4) Major development is prohibited unless, (a) the watershed plan for the relevant watershed, prepared in accordance with subsection (3), has been completed; | 43 (b) the major development conforms with the watershed plan; and (c) a water budget and a water conservation plan, prepared in accordance with section 25 and demonstrating that the water supply required for the major development is sustainable and that assimilative capacity with respect to sewage is sufficient, has been completed. (5) Subsection (4) applies to every application commenced on or after April 23, 2007. (6) Subsection (8) applies to every application commenced before the date mentioned in subsection (5), except an application described in subsection (7). (7) Clause (4) (c) applies to every application that is commenced on or after April 22, 2004 and relates to the part of The Regional Municipality of York that is served by the Yonge Street Aquifer. (8) An application for major development to which this subsection applies shall not be approved unless, (a) the relevant municipality has complied with clause (4) (c); or (b) the applicant, (i) identifies any key hydrologic features and related hydrological functions on the site and how they will be protected, (ii) demonstrates that an adequate water supply is available for the development, and that there is sufficient assimilative capacity to deal with the sewage from the development, without compromising the ecological integrity of the Plan Area, and (iii) provides, with respect to the site and such other land as the approval authority considers necessary, a water budget and a water conservation plan that, (A) characterizes groundwater and surface water flow systems by means of modelling, (B) identifies the availability, quantity and quality of water sources, and (C) identifies water conservation measures.

Water budgets and water conservation plans 25. (1) Every upper-tier municipality and single-tier municipality shall, on or before April 22, 2003, begin preparing a water budget and a water conservation plan, in accordance with subsection (2), for every watershed whose streams originate within the municipality's area of jurisdiction. (2) A water budget and a water conservation plan shall, as a minimum, (a) quantify the components of the water balance equation, including precipitation, evapotranspiration, groundwater inflow and outflow, surface water outflow, change in storage, water withdrawals and water returns; (b) characterize groundwater and surface water flow systems by means of modelling; (c) identify, (i) targets to meet the water needs of the affected ecosystems, (ii) the availability, quantity and quality of water sources, (iii) goals for public education and for water conservation, and (iv) impacts from changes in precipitation patterns, including those resulting from climate change; (d) develop a water-use profile and forecast; (e) evaluate plans for water facilities such as pumping stations and reservoirs; (f) identify and evaluate, (i) water conservation measures such as public education, improved management practices, the use of flow-restricting devices and other hardware, water reuse and recycling, and practices and technologies associated with water reuse and recycling, (ii) water conservation incentives such as full cost pricing, and (iii) ways of promoting water conservation measures and water conservation incentives; (g) analyse the costs and benefits of the matters described in clause (f); (h) require the use of specified water conservation measures and incentives; (i) contain an implementation plan for those specified measures and incentives that reconciles the demand for water with the water supply; (j) provide for monitoring of the water budget and the water conservation plan for effectiveness

Wouldn't completing a requisite watershed plan and water budget *first* before any future development is permitted then provide a measure of water safety and security and sustainability?

Six. Historic Contamination Questions

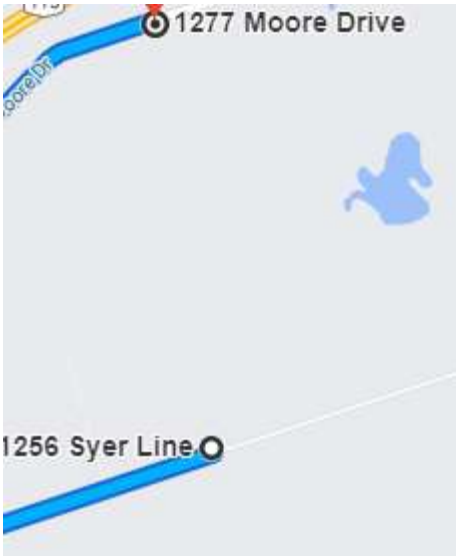
The Millbrook jail lands have been found to be contaminated with several toxic elements but the one of most concern is tetrachloroethylene (PCE). The latest report "*indicated the direction of groundwater flow in Layer 3 is towards the Southeast (Feb. 2021 data) the location of the Millbrook Municipal Supply Wells.*
Infrastructure Ontario (IO) provided an Annual Monitoring Report for the lands from 2020-2021 (GHD, 2021) though, unlike previous years, it does not include any recommendations or future work plans. IO was contacted to determine the scope of work for the remainder of 2021 and 2022 or beyond , as well as clarification regarding the lack of data or discussions regarding the soil vapour analyses from 2020 and early 2021, no response has been received to date." (Council meeting report Nov. 15, 2021)
What is the status of ongoing monitoring including soil vapour testing results?

The same report to council concluded that the confining Layer 2, the aquitard between Layer 1 and Layer 3 is currently restricting the movement of water and contaminants between Layer 1 and Layer 3. However, no confined aquifer is immune to contamination.
What impact could the drawdown have on possible contamination – will this be investigated?

Seven. Alternative Water Supply Questions

Two of the slides in the recent Anderson report suggest the wells at 1256 Syer Line Cavan Monaghan purchased years ago be looked at as a future servicing possibility for Millbrook. However, Kawartha Downs also has the expectation to use the Syer Line well. Property almost due north at 1277 Moore Drive (the former Cavan Springs bottled water plant) has also been purchased for their water supply for their huge residential/commercial complex.

"*The proponents for the site development have purchased a property on Moore Road abutting the Syer Line property. This site is provided with wells that are expected to provide similar water quality to that of the Syer Line wells, with potentially higher yield. …This supply source is presently undergoing yield tests to determine the safe rate of supply." This supply may be connected to the proposed future municipal supply from the Syer Line site to ensure a long-term, stable potable water source for the municipal development area and adjoining employment lands." – 2022 Clearford report*



There is also the nearby industrial complex approved for 1066 Syer Line with its proposed 620,000 sq. ft cannabis facility which will require at least 60,000 litres of water daily. In a hydrogeological assessment conducted by Cambium October 15 2021 for the property at 1066 Syer Line, however, it stated: "*In summary, there is ample proven supply for industrial uses* ***that do not require process or washing water across the site.*** *There is an indicated additional and isolated supply potential from the upper unit which could support either non-process water industrial development, or industrial uses that require process water up to ~144,000L/day. Cambium recommends a further testing program to provide proven water quality and quantity from the upper unconfined aquifer as well as the occurrence of the upper unconfined aquifer across the site.* "

It should also be noted that a consultant report presented in June 2009 indicated the well located on 1277 Moore Drive was deemed unsuitable as potential municipal water supply due to possible site contamination from historic uses. There was a temporary asphalt production plant on site in 2003.

In a report prepared by Meridian Consultants entitled Fraserville Secondary Plan Update Background report finalized on June 10, 2009 it states on page 7 in section 3.2 Water Supply: "*Test results on the preferred site indicated a concern of possible site contamination. The contamination stems from historic uses of the lands."*
The MOECC well records for 1277 Moore Drive and 1256 Syer Line are almost exactly at the same depth – as are other nearby private wells… so this suggests these wells are all within the same aquifer.
Have the combined requirements of Kawartha Downs and Millbrook been investigated? Has there been a groundwater impact study on the surrounding area? Is there a water quality report for 1256 Syer Line? Has an Environmental Impact Study been conducted on the combined usage of the two wells Moore and Syer Line (as well as the well located at 1066 Syer Line)?

Eight. Wastewater Capacity Questions

Cambium conducted a Municipal Allocation Study for the Township –Cambium Allocation Study 2018-07-11.It stated in part "*through this assessment it is apparent that the wastewater collection and treatment system is the most limiting factor of future growth under the current regulatory limits."*
It further stated *"from our review of all the applicable information the reserve capacity is equal to 1625 single residential units up to 4 bedrooms*. " Section 7.8.1 of the Official Plan states: "*When considering allocation of capacity, Council shall maintain a 20 percent reserve of available capacity for non-residential uses".*
The R.V. Anderson report of April 3 2023 indicated that there are 1626 approvals and applications in process. If one takes into consideration the 20% reserve this would lower the number 1300. In the Cambium Water and Wastewater Allocation Assessment 2020-03-05 it states that by using Ontario's procedure D-5-1 which is a conservative estimate and by modifying the inputs to the calculation assuming water efficient fixtures and tighter sewers, the reserve capacity is estimated at 1800 units. However if one deducts the 20% (360 units) the resulting 1440 unit capacity has already been exceeded by those applications and approvals.

The July 9 2018 Millbrook Monitoring Study by Cambium mandate was "*to monitor sewage flows as the plant capacity was affected by ingress of water into the collection systems through storm runoff inflow and or groundwater infiltration with the latter encompassing non-compliant discharges of foundation drain water to the Town's combined sewers* ". The Cambium report of 2020-03-05 Water and Wastewater Allocation Assessment for Millbrook stated the ERU of 1173 committed and 452 uncommitted reserves. The committed reserve includes Towerhill South Towerhill North and Nina Court.
Township staff confirmed that there would be no further projects approved until the MSS is completed by RV Anderson.
According to the R.V. Anderson report with time-frames for upgrades etc. for short term and long term servicing it would appear that no further development can take place until at least 2029. **Is this correct?**

Will any further development be frozen until wastewater system upgrades can be completed?
What about any commercial/employment developments? How can they be accommodated if servicing has already reached capacity?

The Bay of Quinte Remedial Action Plan June 2022 report states:

• *Reduce sewage treatment plant and industrial wastewater treatment plant based point source phosphorus loadings by an average of 60%, based on current Environmental Compliance Approval approved limits and no net increase in loadings into the future.* ***This can be accomplished through maintaining a phosphorus effluent limit of 0.1 mg Total Phosphorus/L design objective for all sewage treatment plants and industrial dischargers in the Bay of Quinte watershed***

Sewage treatment plants and industrial wastewater treatment plants that boarder the Bay are generally well positioned to reduce phosphorus loads and plan for future development and climate change. ***However, some plants on tributaries up the watershed are struggling to meet current effluent objectives and will be targeted in the initial implementation phase of the plan.***

As a general rule, Ontario wastewater treatment plant effluent must not exceed a monthly average concentration of one milligram per litre (mg/L) of phosphorus. For some plants, the province sets more stringent effluent limits, as low as 0.02 mg/L, depending on the receiving water body, watershed-specific regulations or policies, and the municipality's ability to fund the necessary treatment technologies.

Are effluent levels in Baxter Creek presently within that 0.1mg of phosphorus loading?
Will the phosphorus effluent limit in Baxter Creek be maintained for the cumulative development applications in Millbrook as well as the Kawartha Downs development in Fraserville? If so, how will this be accomplished? How will it be monitored? Does CM have the ability to fund the necessary treatment technologies? What is the mitigation plan if phosphorus loading levels exceed provincial levels?

The Fallis West and Turner development applications call for several stormwater ponds that will overflow into Baxter Creek. According to the local chapter of Trout Unlimited, Baxter Creek has one of the finest coldwater trout streams. Trout species are dependent on specific temperatures to ensure the survival of populations. Trout species require very specific water temperatures to spawn and to ensure their sustainability Trout Unlimited has noted an increase in temperature being caused by the stormwater outflow of the newly constructed Towerhill South/Highlands subdivision. Trout Unlimited has completed additional and recent studies that raise multiple concerns about increasing water temperatures of Baxter Creek.

In addition, lower levels in Baxter Creek and its tributaries also could mean a water temperature increase which, according to Les Stanfield of the Glenora Fish Research Station would have a negative impact on trout spawning grounds.

Will there be an Environmental Impact Study (EIS) that will investigate the cumulative impact of stormwater management plans and lower levels in Baxter Creek will have on trout populations?

The Millbrook Wells History

The wells in Millbrook are located between two outcroppings of the Oak Ridges Moraine. Two wells were drilled in 1976 to create a municipal water supply. Before 1976 residences and business were supplied by individual wells or a group well.
A third well was drilled in 2002 to ensure water supply for a nursing home – Centennial Place. The Millbrook wells are approximately 31 m deep and constructed in a confined aquifer. (2009 Golder Report). The length and width of the aquifer is unknown, speculated in the Golder report to extend as far south as Carveth Drive.

Originally, permission was given by the MOE (now MECP) for only one well at a time to be used. In 2002 a third well was deemed necessary in order to satisfy the needs of the 128 bed long term care nursing home facility so the increased use of one well to two wells at the same time was required. According to Dave Bradley, the regional MOE Drinking Inspector, permission was granted to the township in 2004 to use two wells at any one time. Mr. Bradley did go on to say that wells *'do not last forever'.* At the October 2021 Cavan Monaghan Council meeting, consultants from R.V. Anderson tasked with a report on the future of water and wastewater servicing in the township stated that in the near future:
"*Millbrook groundwater supply source (well field) near its capacity"* "*Forecasted Township of Cavan Monaghan growth will need to occur outside of Millbrook"*

The wells are located in an area designated "high aquifer vulnerability". According to the Trent Conservation Coalition – Drinking Water Source Protection Regional, the Intrinsic Susceptibility designation the Millbrook wellhead is 'high risk'.

Two of the wells are within the Oak Ridges Moraine: According to the Oak Ridges Moraine Act of 2001:

The objectives of the Oak Ridges Moraine Conservation Plan are,

(a) protecting the ecological and hydrological integrity of the Oak Ridges Moraine Area;

(b) ensuring that only land and resource uses that maintain, improve or restore the ecological and hydrological functions of the Oak Ridges Moraine Area are permitted;

(c) maintaining, improving or restoring all the elements that contribute to the ecological and hydrological functions of the Oak Ridges Moraine Area, including the quality and quantity of its water and its other resources;

(d) ensuring that the Oak Ridges Moraine Area is maintained as a continuous natural landform and environment for the benefit of present and future generations;

(e) providing for land and resource uses and development that are compatible with the other objectives of the Plan

Before 1976, citizens obtained their water supply from individual private wells or group wells. According to longtime lifetime residents of Millbrook there were four main sources of water supply to the village. The pipeline routes consisted of one pipeline located on Medd's Mountain south of the Baxter Creek millpond which supplied merchants on the south side of town. Another pipeline near the site of the now abandoned Millbrook Correctional Facility ran under a now closed and deconstructed gas station located on Union Street (just north of the Post Office) which supplied residents in the western section of town. There was also a well and pipeline route from the north (the site of the Highlands subdivision) which serviced residents in the north end of town, and an additional well located in the southeastern area of the village near the former Millbrook school.

When the wells were drilled in 1976 to create a municipal water supply, residents noted that the flows of nearby streams and waterways were adversely affected. A large pond that was used by the public as a swimming hole and skating rink located approximately 3 kilometres east from the well site dried up instantly. A resident who once resided at 62 King Street East stated that once these wells were drilled, the artesian well that supplied water to houses in the northeastern region of the town dried up completely.

When the pipelines were put in for the municipal supply, one resident recalled 'they had a heck of a time – the pipes kept sinking because of all of the quicksand". This resident also stated that a backhoe being used sank into the quicksand and had to be pulled out with a crane. As well, one house sank partly into the quagmire and had to be moved onto a new concrete slab.

What became of the original pipelines from the interconnected wells and individual wells is unknown - whether they were capped or removed or if the water flow from the sources was redirected. One resident along Tupper Street has noted there is still a pipeline and artesian well on their property. It has been capped. The original southeastern water source is still flowing into a ditch in the town and then disappears underground. It is unknown whether it flows into the town's wastewater system or somewhere underground.

Jail Lands Contamination History

The jail lands are within the wellhead protection zone of Millbrook municipal water supply sourced from a designated 'high vulnerability' aquifer on the Oak Ridges Moraine. The jail land property is located on the ORM. The jail was serviced by a separate well which has now been decommissioned. In 2010, IO conducted an EA Phase 1, which was followed by an EA Phase 2 in 2011. It was a Category B project – (projects classified that have some potential to cause negative environmental effects and require the preparation of a Consultation and Documentation Report (C&D Report). The C & D report found several contaminants – from that report:

(APECs) including the Power Plant (APEC D), Former Tire Storage, the Sand Pit (APEC K), Fire Training Tower (APEC J), Former Dumpster Area (APEC L), the Lagoons (APEC M), the Septic Tank and Septic Drainage area, and the Sludge Bed (APEC O). Contaminants of concern on Site include petroleum hydrocarbons (PHC), xylenes, polycyclic aromatic hydrocarbons (PAHs), naphthalene, lead, polychlorinated biphenyls (PCBs), zinc, cyanide, total chromium, and mercury.

Because the decommissioning was only going to be selective for certain parts of the property, a Part II EA request was sought for a clean-up of the entire property. That request was denied in 2014 by then MOE Minister Bradley. The Minister indicated in his decision that future owners of the property will be required to remediate the lands including any remaining contaminated lands prior to any future development. In his decision to deny an EA Part II order request for a complete clean-up it was stated:

"There is no intent to remediate contaminated soils in other Areas of Potential Environmental Concerns."
"Infrastructure Ontario has informed the Ministry of the Environment that it does not intend to remediate all Areas of Potential Environmental Concern on the Millbrook Correctional Facility. Infrastructure Ontario recognizes that there are contaminated soils on the Project site; however, remediation of contaminated areas was only considered where it overlaps directly with the undertaking or will be impacted by the activities that constitute the undertaking and thus need to be considered in terms of possible disturbance. The areas of contamination that do not overlap with the Project and are therefore not expected to cause any environmental impacts as a result of the Project, are not being remediated at this time."

Remediation would be required in accordance with the Ministry of the Environment standards under Ontario Regulation 153/04 (Records of Site Condition) including any remaining contaminated lands prior to any future development.

The Minister also indicted in his decision that, as a precaution, four monitoring wells would be drilled. When the four monitoring wells were installed, it was discovered a contaminant, tetrachloroethylene (PCE) not listed in the C & D Report for the EA Phase 2 was in the ground in several areas and a plume of the contaminant was headed in the direction of the aquifer that supplies Millbrook`s water supply. According to a former jail guard, barrels of PCE were dumped onto the property on a regular basis for many years. The problem with PCE is, unlike some other contaminants that might dissipate over time, PCE does not. It can also travel upwards through the sol and into the air. The four monitoring wells turned into 14 and to date there are 30.

The July 3rd, 2017 Cavan Council Meeting agenda included a report completed in 2016 by a company BluMetric (retained by IO) on the ongoing groundwater contamination on the site of the former Millbrook Correctional facility. CM Council contracted the company Cambium in 2016 to complete a peer environmental review of Blumetric Environmental's Additional Deep Aquifer and Source Investigations, IO-RFS-15-080, Site 40-N00596 prepared for Infrastructure Ontario (dated June 28, 2016) regarding the property located at 706 County Road 21, Millbrook Ontario.

These are the recommended actions from the peer review.

RECOMMENDED ACTIONS

The recommendations provided below are listed in order of priority sequence.

1. Sample each of the MWF supply wells for the VOC parameters on a monthly basis.

2. It is essential that IO conduct additional on-site delineation in the area between monitoring wells MW6-16 and MW3-14 to identify concentration gradients and characterize the area between the suspected PCE source and the downgradient boundary. It is critical that the source of the PCE impacts be confirmed due to the proximity to the Millbrook MWF.
3. Schedule a meeting with the MOECC in order to review and confirm the work plan moving forward. Including the MOECC as a stakeholder will be critical for both technical and community purposes. As noted in the 2016 BluMetric report, the MOECC previously provided comments on investigative work at the Site and are familiar with this file.
4. Develop a Risk Management Plan (RMP) as a contingency in the event that PCE concentrations are detected in groundwater samples collected from the Millbrook MWF supply wells. Such a plan would include detailed actions in the event specific concentrations are detected. Furthermore, the RMP may include sentinel monitoring wells within the WHPA-A zone of the Millbrook MWF to assess for PCE migration from the Site. The purpose of these installations would be to assess for both current PCE concentrations and potential concentration fluctuations over time, in the event that the PCE plume migrates east / southeast. It is noted that BluMetric estimated the average linear groundwater velocity in Layer 3 to be approximately 4.0 metres per year. Due to the potential issues with insufficient sample volumes and well development with the Solinst CMT well installations, traditional piezometer standpipes should be utilized as part of the delineation work program.
5. If possible, sample the three (3) existing on-site (former correctional facility wells) drinking water supply wells for VOC parameters. In particular, the two (2) wells located in the southeast corner of the Site and installed in the Millbrook MWF aquifer (Layer 3) should be sampled for PCE plume purposes.
6. On- and off-site delineation should be conducted in conjunction with a certified Risk Assessment under Ontario Regulation 153/04, as amended, and may include the collection of soil vapour samples from residential properties along Queen Street and Hunter Street. Data from these investigations should be evaluated by a Risk Assessor.

It is unknown if any of these recommendations have been undertaken. The latest monitoring completed in 2020 included air sampling on the jail lands but it appears, air sampling on nearby residential properties (recommendation # 6) has not been undertaken. In May 2019, an update was presented to Council and Council which included the results of 2018 monitoring tests. That report indicated the PCE plume or plumes had not reached the Millbrook aquifer and there was no contamination of the water supply.

In 2019 Infrastructure Ontario (IO) indicated to Council it no longer wanted to monitor the property past 2019 and would release its final report in 2020. That report has not been shared with the public. When asked, IO responded it would only share that report with the Municipality, the Peterborough Public Health and the Ministry of the Environment, Conservation and Parks. It would be the municipality's decision if they wished to make it public. To date, that report has not been made public. Council was not happy with the proposal by IO to end its monitoring program and complained to the MOECC, now the MECP. For several months, CM Council agendas under the CAO report 'ongoing business', it was noted the township was in constant communication with MECP about contamination of the jail lands – but now communication with MECP as 'ongoing business' appears to have disappeared from current agendas.

Nikash Persaud

To: Rika Law
Subject: RE: CM Future Water & Wastewater Servicing Presentation - Meetig Thank You & Documents

---

From: Rika Law
Sent: Friday, June 9, 2023 10:57 AM
To: [redacted]
Cc: whancock@cavanmonaghan.net; 'John Connolly' <jconnolly@cavanmonaghan.net>; 'Karen Ellis' <kellis@cavanmonaghan.net>; Dania Chehab <dchehab@rvanderson.com>
Subject: RE: CM Future Water & Wastewater Servicing Presentation - Meetig Thank You & Documents

Dear [redacted]

Thank you for taking the time to meet with Reg and I on Wed. It was a lovely discussion and helped us to understand the local community perspective as well. Thank you for sharing your concerns with us. The Township and RVA have the same goals of sustainable growth through having sustainable, reliable and safe drinking water and wastewater servicing.

We will review the information provided and look forward to seeing you at the June 21st PIC, where you can meet the rest of the RVA project team – Dania and Matt in person. Reg will also be in attendance at that meeting.

Please advise if [redacted] would like to be added to the project stakeholder list to receive project notices directly to her email.

Thanks!

Rika Law, P.Eng., PMP (she/her)
Team Lead, Principal

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300, Toronto ON M2J 4Z8
t 416 497 8600 ext. 1209
LinkedIn | Facebook | Website

SUMMER HOURS NOTICE: RVA offices will be closed each Friday from June 2nd to September 8th as we celebrate the summer season. We will be available for project and construction related matters. For urgent requests, please contact office number.

Out of Office & Vacation notices: I will be out of the office for conferences and vacation for the week of June 12-16, 2023 (inclusive) and June 26-30, 2023 (inclusive). Please coordinate your project needs with me and/or the associated project coordinator in advance.

From: [redacted]
Sent: Thursday, June 8, 2023 9:04 AM
To: Rika Law <rlaw@rvanderson.com>; Dania Chehab <dchehab@rvanderson.com>
Cc: whancock@cavanmonaghan.net; 'John Connolly' <jconnolly@cavanmonaghan.net>; 'Karen Ellis'

<kellis@cavanmonaghan.net>; [redacted]
Subject: CM Future Water & Wastewater Servicing Presentation - Meetig Thank You & Documents

[CAUTION EXTERNAL EMAIL] Make Sure that it is legitimate **before** Replying or Clicking on any links

Hi Rika:

A heart-felt thank you is extended to both you and Reg for the meeting invitation and the lively, informative discussion and helping us understand the process.

As promised, attached you will find the electronic copy of the list of questions we presented yesterday morning. We understand some of those questions have been answered during our chat; but we may have more to submit after the June 21st PIC.

We look forward to more discussions. If you have any questions about documentation and historical information we might be able to provide, please do not hesitate to ask. Attached also is a little history of the Millbrook wells and the Millbrook Correctional Facility which may be of interest.

Thank you again for the opportunity to discuss this very important issue of water safety, security and sustainability.

Yours truly

[redacted]

[redacted]

Nikash Persaud

From: Dania Chehab
Sent: June 15, 2023 9:47 AM
To: rentals veltrigroup.com
Cc: Wayne Hancock
Subject: RE: MSS Notice of Public Information Centre Class Environmental Assessment

Categories: Filed by Newforma

Good morning Krissy,

Thank you for your email and request.
As noted, we will add Mr. Frank Veltri to our mailing list for the Master Servicing Study.

All the best,
Dania

Dania Chehab, P.Eng., M.Eng., ENV SP (she/her)
Project Manager, Water & Wastewater

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300, Toronto ON M2J 4Z8
t 416 497 8600 ext. 1456
LinkedIn | Facebook | Website

From: rentals veltrigroup.com <rentals@veltrigroup.com>
Sent: Monday, June 12, 2023 2:36 PM
To: Wayne Hancock <whancock@cavanmonaghan.net>
Cc: Dania Chehab <dchehab@rvanderson.com>
Subject: MSS Notice of Public Information Centre Class Environmental Assessment

[CAUTION EXTERNAL EMAIL] Make Sure that it is legitimate **before** Replying or Clicking on any links

Good Afternoon,

I'd like to request to have Mr. Frank Veltri added to your mailing list with regards to the Public Information Centre on June 21, 2023.

Our office address is 68 King St. E. Bowmanville, ON L1C 3X2.

Thank you.

Krissy Morrison
Property Manager

Nikash Persaud

From: Dania Chehab
Sent: June 15, 2023 9:44 AM
To: construction veltrigroup.com
Cc: Wayne Hancock
Subject: RE: R205371-20230605 - Cavan Monaghan - Notice of PIC

Categories: Filed by Newforma

Good morning Hayley,

Thank you for your email and request.
Absolutely, we will add you to our mailing list for the Master Servicing Study.

All the best,
Dania

Dania Chehab, P.Eng., M.Eng., ENV SP (she/her)
Project Manager, Water & Wastewater

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300, Toronto ON M2J 4Z8
t 416 497 8600 ext. 1456
LinkedIn | Facebook | Website

From: construction veltrigroup.com <construction@veltrigroup.com>
Sent: Thursday, June 15, 2023 9:25 AM
To: Dania Chehab <dchehab@rvanderson.com>
Subject: Fw: R205371-20230605 - Cavan Monaghan - Notice of PIC

[CAUTION EXTERNAL EMAIL] Make Sure that it is legitimate **before** Replying or Clicking on any links

Good Morning Dania,

Are you able to add us to the communications list to receive current updates for Millbrook projects?

We are currently building a subdivision (Creekside) in Millbrook on Coldbrook Drive and would like to know more about future developments.

Thank you
Hayley Middleton



Veltri & Son Limited
68 King Street East
Bowmanville ON L1C3X2
(905) 623-4172

From: Kathie Lycett <kathie@bethanyrealestate.ca>
Sent: June 6, 2023 2:55 PM
To: construction veltrigroup.com <construction@veltrigroup.com>
Subject: Re: R205371-20230605 - Cavan Monaghan - Notice of PIC

Hayley,

Only you would know if Veltri Group was notified, as the email would have gone to you. I don't know what impact this will have on Veltri Group, but I would suggest that Frank speak to either Mayor Matthew Graham or Deputy Mayor, Ryan Huntley. This morning, the Mayor contacted me by text communication to find out why Frank had not acknowledged his email. My guess is that the Mayor was following up on a meeting Frank had with him on May 26, and that it had nothing to do with the Notice of Public Information for the Township's Water and Wastewater Master Service Plan. I told the Mayor that Frank's email would go to his office in Bowmanville and might not come to his attention as Frank works every day on site in Millbrook. Can you tell me if you have received an email from the Mayor in the last week?

Kathie

On 2023-06-06 10:48, construction veltrigroup.com wrote:

> Frank is asking "Did we get notified?"
>
> Please advise if you can or who should I be asking if we are affected?
>
> Hayley

From: Kathie Lycett <kathie@bethanyrealestate.ca>
Sent: June 5, 2023 10:57 AM
To: construction veltrigroup.com <construction@veltrigroup.com>
Subject: Fwd: R205371-20230605 - Cavan Monaghan - Notice of PIC

Frank,

I received this email today, with attached Notice, as Chair of the Millbrook BIA. I would expect that you received it too? (I would hope so).

Kathie

-------- Original Message --------

Subject:R205371-20230605 - Cavan Monaghan - Notice of PIC
Date:2023-06-05 10:31
From: Carol Derrick <cderrick@rvanderson.com>
To:"chair@millbrookbia.com" <chair@millbrookbia.com>

Good morning,
On behalf of the Township of Cavan Monaghan, please see attached the Notice of Public Information Centre for the Township of Cavan Monaghan Water and Wastewater Master Servicing Plan Municipal Class Environmental Assessment.
This notice is sent to your attention as it was deemed that you may be an interested stakeholder.
Should you wish to stop receiving notices pertaining to this project or would like to direct it to alternate recipient, please advise the undersigned.
Yours very truly,

R.V. Anderson Associates Limited
Dania Chehab, P.Eng., ENV SP
Project Manager
dchehab@rvanderson.com

R.V. Anderson Associates Limited has been engaged in the provision of professional engineering, operations, and management services since 1948. This message is intended only for the use of the individual(s) to whom it is addressed. If you are not the intended recipient(s), disclosure, copying, distribution and use are prohibited; please notify us immediately and delete this email from your systems. Please see http://www.rvanderson.com for Copyright and Terms of Use.
--

***Kathie Lycett,* Broker**

RE/MAX **Eastern Realty Inc.**
46 King Street E, Millbrook, On L0A 1G0
Office: 705-932-2003 Mobile: 705-277-2003

bethanyrealestate.ca

--

***Kathie Lycett,* Broker**

RE/MAX **Eastern Realty Inc.**
46 King Street E, Millbrook, On L0A 1G0
Office: 705-932-2003 Mobile: 705-277-2003

bethanyrealestate.ca

Correspondence at Public Information Centre

~

Public Members

TOWNSHIP OF CAVAN MONAGHAN

SIGN-IN SHEET

Township of Cavan Monaghan
Master Servicing Study for Water & Wastewater Municipal Class Environmental Assessment
Public Information Centre No. 1
Wednesday June 21, 2023

Note: Personal information provided will be used only for providing updates on the status of the project, if requested. It will not become part of the public record.

Please Print Clearly

NAME	ADDRESS (INCLUDE POSTAL CODE)	TELEPHONE	E-MAIL	ADD TO STUDY MAILING/EMAIL LIST? (Y/N)
[redacted]	[redacted]			
[redacted]	[redacted]	[redacted]	[redacted]	Y
[redacted]	[redacted]	[redacted]	[redacted]	N
[redacted]	[redacted]	[redacted]	[redacted]	
[redacted]	[redacted]	[redacted]	[redacted]	X
[redacted]	[redacted]	[redacted]	[redacted]	
[redacted]	[redacted]	[redacted]	[redacted]	

TOWNSHIP OF CAVAN MONAGHAN

SIGN-IN SHEET

Township of Cavan Monaghan
Master Servicing Study for Water & Wastewater Municipal Class Environmental Assessment
Public Information Centre No. 1
Wednesday June 21, 2023

Note: Personal information provided will be used only for providing updates on the status of the project, if requested. It will not become part of the public record.

Please Print Clearly

NAME	ADDRESS (INCLUDE POSTAL CODE)	TELEPHONE	E-MAIL	ADD TO STUDY MAILING/EMAIL LIST? (Y/N)
[redacted]	[redacted]			

TOWNSHIP OF CAVAN MONAGHAN

Water and Wastewater Master Servicing Study
Public Information Centre
Class Environmental Assessment

Comment Sheet

Name / Organization: [redacted]

Address: [redacted]

Phone Number: [redacted]

Comments: This is based on a mythical growth plan (GHS 2022) NOT a realistic assessment of long term water + sewage capacity in a warming climate (how will the impact of this be determined?). There are locations in the GTA that have jobs, access to lake Ontario for water/sewers, and infrastructure (public transit, schools, policing, medical facilities) - far more suited to growth than a rural municipality with limited water/sewer capacity/social services and the requirement for 10,000 people to drive everywhere!! Tell Ford and his development buddies to F**k OFF!

Thank you for your participation!

If you have additional comments or questions, please contact a member of the project team:

Township of Cavan Monaghan
Wayne Hancock, P.Eng.
Director of Public Works
988 County Road 10
Millbrook, Ontario, L0A 1G0
Tel: (705) 932-9327
Fax: (705) 932-3458
whancock@cavanmonaghan.net

R.V. Anderson Associates Limited
Dania Chehab, P.Eng., ENV SP
2001 Sheppard Avenue East,
Suite 300
Toronto, ON, M2J 4Z8
Tel: (416) 497-8600 ext. 1456
dchehab@rvanderson.com

Correspondence After Public Information Centre

~

Agencies

Nikash Persaud

From: Orpana, Jon (MECP) <Jon.Orpana@ontario.ca>
Sent: December 5, 2023 10:21 AM
To: Nikash Persaud
Subject: RE: 205371 - Cavan Monaghan Master Servicing Study MECP Submission

Hello Nikash,

Apologies for the late reply but yes your report has been received.

Have a great day.

Jon

Jon K. Orpana hear name
Regional Environmental Planner
Environmental Assessment Branch
Ministry of the Environment, Conservation and Parks
Kingston Regional Office
PO Box 22032, 1259 Gardiners Road
Kingston, Ontario
K7M 8S5

Phone: (613) 548-6918
Fax: (613) 548-6908
Email: jon.orpana@ontario.ca

From: Nikash Persaud <npersaud@rvanderson.com>
Sent: December 4, 2023 4:21 PM
To: Orpana, Jon (MECP) <Jon.Orpana@ontario.ca>
Subject: RE: 205371 - Cavan Monaghan Master Servicing Study MECP Submission

Hi Jon,

I am following up to make sure that our EA report was received. Please let me know.

Thanks,

Nikash K. Persaud (he/they)
Class Environmental Assessment Coordinator

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300, Toronto ON M2J 4Z8
t 416 497 8600 ext. 1337
LinkedIn | Facebook | Website

From: Nikash Persaud
Sent: Thursday, November 23, 2023 9:11 AM
To: Jon.orpana@ontario.ca; eanotification.eregion@ontario.ca
Cc: Rika Law <rlaw@rvanderson.com>; Matthew Grekula <MGrekula@rvanderson.com>; Dania Chehab <dchehab@rvanderson.com>; Wayne Hancock <whancock@cavanmonaghan.net>; Jessica Fradley <jfradley@cavanmonaghan.net>; John Connolly <jconnolly@cavanmonaghan.net>
Subject: 205371 - Cavan Monaghan Master Servicing Study MECP Submission

Hi Jon,

Please see attached the draft Project File Report for the Cavan Monaghan Master Servicing Study (with a focus on their primary settlement area – Millbrook), undertaken as Approach 1 of the Master Planning framework. We would really appreciate if the MECP can provide their review in 30 calendar days so that the Township can wrap up the study by early 2024 and move onto the project specific Class EAs that come out of this Master Servicing Study.

The following link is a sharepoint folder which contains the appendices for the Master Servicing Study:
RVA - Cavan Monaghan MSS MECP Submission

After receiving the MECP's comments, the project team will review and consider the comments prior to finalizing the report and issuing the Notice of Completion for the public's 30-day review period.

Please let us know if you have any trouble with the files or any comments or questions.

Regards,

Nikash K. Persaud (he/they)
Class Environmental Assessment Coordinator

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300, Toronto ON M2J 4Z8
t 416 497 8600 ext. 1337
LinkedIn | Facebook | Website

R.V. Anderson Associates Limited has been engaged in the provision of professional engineering, operations, and management services since 1948. This message is intended only for the use of the individual(s) to whom it is addressed. If you are not the intended recipient(s), disclosure, copying, distribution and use are prohibited; please notify us immediately and delete this email from your systems. Please see http://www.rvanderson.com for Copyright and Terms of Use.

Nikash Persaud

From: Nikash Persaud
Sent: January 30, 2024 8:35 AM
To: Orpana, Jon (MECP)
Subject: RE: 205371 - Cavan Monaghan Master Servicing Study MECP Submission

Categories: Filed by Newforma

Hi Jon,

Hope all is well; just thought I would make contact again to provide an update on our Notice of Completion. We will likely be issuing the Notice of Completion February 7th or 8th, latest the 12th.

Thanks,

Nikash K. Persaud (they/them)
Class Environmental Assessment Coordinator

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300, Toronto ON M2J 4Z8
t 416 497 8600 ext. 1337
LinkedIn | Facebook | Website

From: Orpana, Jon (MECP) <Jon.Orpana@ontario.ca>
Sent: Friday, January 5, 2024 4:13 PM
To: Nikash Persaud <npersaud@rvanderson.com>
Subject: RE: 205371 - Cavan Monaghan Master Servicing Study MECP Submission

Hello Nikash,

I have taken a cursory look at the report and nothing significant jumps out at me at this point. I would go ahead and issue the notice and begin the public comment period to get rolling and I can finish my review during that time.

Regards,

Jon

Jon K. Orpana hear name
Regional Environmental Planner
Environmental Assessment Branch
Ministry of the Environment, Conservation and Parks

Kingston Regional Office
PO Box 22032, 1259 Gardiners Road
Kingston, Ontario
K7M 8S5

Phone: (613) 548-6918
Fax: (613) 548-6908
Email: jon.orpana@ontario.ca

From: Nikash Persaud <npersaud@rvanderson.com>
Sent: January 5, 2024 9:52 AM
To: Orpana, Jon (MECP) <Jon.Orpana@ontario.ca>
Cc: Dania Chehab <dchehab@rvanderson.com>; Rika Law <rlaw@rvanderson.com>
Subject: RE: 205371 - Cavan Monaghan Master Servicing Study MECP Submission

Hi Jon,

Reaching out since it has now been over 30 days since our report was received by your office. Is there an updated timeline as to when we should expect a reviewed copy?

Thanks,

Nikash K. Persaud (they/them)
Class Environmental Assessment Coordinator

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300, Toronto ON M2J 4Z8
t 416 497 8600 ext. 1337
LinkedIn | Facebook | Website

From: Orpana, Jon (MECP) <Jon.Orpana@ontario.ca>
Sent: Tuesday, December 5, 2023 10:21 AM
To: Nikash Persaud <npersaud@rvanderson.com>
Subject: RE: 205371 - Cavan Monaghan Master Servicing Study MECP Submission

Hello Nikash,

Apologies for the late reply but yes your report has been received.

Have a great day.

Jon

Jon K. Orpana hear name
Regional Environmental Planner
Environmental Assessment Branch
Ministry of the Environment, Conservation and Parks
Kingston Regional Office
PO Box 22032, 1259 Gardiners Road
Kingston, Ontario
K7M 8S5

Phone: (613) 548-6918
Fax: (613) 548-6908
Email: jon.orpana@ontario.ca

From: Nikash Persaud <npersaud@rvanderson.com>
Sent: December 4, 2023 4:21 PM
To: Orpana, Jon (MECP) <Jon.Orpana@ontario.ca>
Subject: RE: 205371 - Cavan Monaghan Master Servicing Study MECP Submission

Hi Jon,

I am following up to make sure that our EA report was received. Please let me know.

Thanks,

Nikash K. Persaud (he/they)
Class Environmental Assessment Coordinator

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300, Toronto ON M2J 4Z8
t 416 497 8600 ext. 1337
LinkedIn | Facebook | Website

From: Nikash Persaud
Sent: Thursday, November 23, 2023 9:11 AM
To: Jon.orpana@ontario.ca; eanotification.eregion@ontario.ca
Cc: Rika Law <rlaw@rvanderson.com>; Matthew Grekula <MGrekula@rvanderson.com>; Dania Chehab <dchehab@rvanderson.com>; Wayne Hancock <whancock@cavanmonaghan.net>; Jessica Fradley <jfradley@cavanmonaghan.net>; John Connolly <jconnolly@cavanmonaghan.net>
Subject: 205371 - Cavan Monaghan Master Servicing Study MECP Submission

Hi Jon,

Please see attached the draft Project File Report for the Cavan Monaghan Master Servicing Study (with a focus on their primary settlement area – Millbrook), undertaken as Approach 1 of the Master Planning framework. We would really appreciate if the MECP can provide their review in 30 calendar days so that the Township can wrap up the study by early 2024 and move onto the project specific Class EAs that come out of this Master Servicing Study.

The following link is a sharepoint folder which contains the appendices for the Master Servicing Study:
RVA - Cavan Monaghan MSS MECP Submission

After receiving the MECP's comments, the project team will review and consider the comments prior to finalizing the report and issuing the Notice of Completion for the public's 30-day review period.

Please let us know if you have any trouble with the files or any comments or questions.

Regards,

Nikash K. Persaud (he/they)

Class Environmental Assessment Coordinator

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300, Toronto ON M2J 4Z8
t 416 497 8600 ext. 1337
LinkedIn | Facebook | Website

R.V. Anderson Associates Limited has been engaged in the provision of professional engineering, operations, and management services since 1948. This message is intended only for the use of the individual(s) to whom it is addressed. If you are not the intended recipient(s), disclosure, copying, distribution and use are prohibited; please notify us immediately and delete this email from your systems. Please see http://www.rvanderson.com for Copyright and Terms of Use.

R.V. Anderson Associates Limited has been engaged in the provision of professional engineering, operations, and management services since 1948. This message is intended only for the use of the individual(s) to whom it is addressed. If you are not the intended recipient(s), disclosure, copying, distribution and use are prohibited; please notify us immediately and delete this email from your systems. Please see http://www.rvanderson.com for Copyright and Terms of Use.

Correspondence After Public Information Centre

~

Organizations

Nikash Persaud

To: Rika Law
Subject: RE: 205371 - Comments CM Master Servicing Study Public Information Materials

From: Wayne Hancock <whancock@cavanmonaghan.net>
Sent: Friday, July 21, 2023 1:29 PM
To: Yvette Hurley <yhurley@cavanmonaghan.net>
Cc: Dania Chehab <dchehab@rvanderson.com>; Rika Law <rlaw@rvanderson.com>
Subject: Fwd: Comments CM Master Servicing Study Public Information Materials

[CAUTION EXTERNAL EMAIL] Make Sure that it is legitimate **before** Replying or Clicking on any links

Sent from my iPhone

Begin forwarded message:

> **From:** Graham Whitelaw <graham.whitelaw@gmail.com>
> **Date:** July 21, 2023 at 12:48:33 PM EDT
> **To:** Wayne Hancock <whancock@cavanmonaghan.net>, Dania Chehab <dchehab@rvanderson.com>
> **Cc:** Craig Onafrychuk <baxtercreekwatershed@gmail.com>, Chris Grayson <cgrayson@nexicom.net>, John Connolly <jconnolly@cavanmonaghan.net>
> **Subject: Comments CM Master Servicing Study Public Information Materials**
>
> Dear Mr. Hancock and Ms. Chehab,
>
> Thank you for the opportunity to submit comments on the CM Master Servicing Study Public Information Materials. Our comments (attached) are being sent through our Chair, Chris Grayson (copied on this email). Please contact me and copy Chris and the BCWA website if you want to meet to discuss or have questions on our submission.
>
> Warm regards,
>
> Graham Whitelaw, PhD. RPP
> Volunteer Director BCWA

Baxter Creek Watershed Alliance
53 King Street West, Box 325, Millbrook, ON, L0A 1G0
baxtercreekwatershed@gmail.com
www.baxtercreekwatershed.org

July 18, 2023

To Wayne Hancock, Township of Cavan Monaghan and Dania Chehab, R.V. Anderson Associates Limited

Re: Cavan-Monaghan Water and Wastewater Servicing Study and Plan

I am writing on behalf of the Baxter Creek Watershed Alliance (https://baxtercreekwatershed.org/). We are a not-for-profit federally incorporated Environmental- Non Government Organization with a mission to conserve and enhance the Baxter Creek watershed environment for future generations. Our group actively participates in the planning process using evidence-based information. We are not opposed to development, rather, we are interested in development that does not negatively impact watershed health, and ideally improves watershed health.

This review of the Cavan-Monaghan Water and Wastewater Servicing information presented at the Wednesday June 21, 2023 meeting is based on three main guiding principles:

i. Community well-being and safety;
ii. Ecosystem restoration/improvement through technical design; and
iii. Innovative public consultation and engagement.

Comments, recommendations and questions

1. Many of our Board members are concerned about the intensity of development that has been agreed to by the County/CM. Are these population numbers fait accompli? The numbers appear to be driving much of the EA alternatives selection process.
2. Recommend consultation beyond public meetings. Please consider a field trip led by CM staff and consultants to the Wellhead protection area, Jail Lands contamination site, existing treatment plant, and various sections of the Baxter Creek to learn about trout habitat and coldwater streams.
3. How does or does not the Growth Management Strategy (GMS) and the Water Wastewater Servicing Plan align with the current Township of Cavan-Monghan Official Plan policy 3.25 for Watershed Planning? As per policy 3.25 will a watershed plan for the Otonabee Basin and a subwatershed plan for the Baxter Creek (the subwatershed for the Millbrook Drinking Water System) be completed prior to approval of the GMS and Master Servicing Plan (MSP). Policy 3.25 states:

a. "It is the objective of the Township to support the preparation and implementation of watershed and subwatershed plans within the Township. These plans are intended to ensure that there is an appropriate balance between the objectives of water supply management, habitat protection, flood management and land use to protect and enhance water quality and quantity for future generations. A watershed is an area of land that drains into a watercourse or body of water. Unlike municipal boundaries, watershed boundaries are defined by nature and, as a result, watersheds often overlap a number of jurisdictions. The intent of watershed and subwatershed plans is to provide direction and target resources for the better and effective management and restoration of a given watershed and subwatershed."
b. Will an admendment to policy 3.25 be required or an order by council to either implement or not implement a watershed and subwatershed plan prior to the GMS and MSP.
c. What are the risks of not implementing a watershed and subwatershed plan prior to the GMS and MSP?

4. How does or does not the GMS and MSP conform with the Township Official Plan policy 7.8 Municipal Water and Wastewater Services sub-policy 7.8.2 Water Supply policies?
5. How does or does not the GMS and MSP conform with the Township Official Plan policy 2.1, specially 2.1.1 Residential Growth Targets, "b) Planning for residential growth of approximately 65 residential units per year to the year 2031, with most directed to the Millbrook urban serviced area"? Will an amendment to the OP now be required or an order through council to amend the OP to accommodate the GMS and MSP?
6. Has a report been prepared by Trent Conservation Coalition Source Protection Region to provide a conceptual understanding of water availability and use in the Millbrook Settlement area, specifically within the Millbrook Drinking Water Source Protection Area and Baxter Creek subwatershed? Our understanding is that a conceptual water budget has been completed. How will such a report inform the Water and Wastewater Servicing study and plan?
7. Has a water budget accounted for all the water that moves into and out of the Baxter Creek subwatershed (including evaporation, precipitation, and runoff) as well as the movement of water within the watershed (including groundwater recharge and infiltration)? How might water budget be impacted by climate change through 2051. Is climate change being considered and modelled? How has/will such modelling inform the Water and Wastewater Servicing study and plan?
8. Has a higher Tier 2 and Tier 3 Water Budget been completed for the Baxter Creek subwatershed and/or the Trent Source Protection Region? How will this information

inform this study? If a tier 2 and 3 study have not been completed, we recommend that these studies be completed as part of this study and plan process.

9. If a Tier 2 or tier 3 water budget is not being completed based on the stress level of the watershed, given current growth and future growth forecasted, have current or future demand scenarios been compared to the conceptual water budget model for the Baxter Creek subwatershed? Are there any supply and demand concerns based on future growth scenarios?
    a. Millbrook Urban Area 2021 population 2,558 total employees 970
    b. Millbrook Urban Area 2051 population 10,455 total employees 3,983
10. Under the current groundwater conceptual water budget stress assessment, is future growth including commercial demand considered?
11. Given the known subsurface and groundwater contamination in the Millbrook Well Head Protection Areas B zone, from the activities at the former Millbrook Correctional Centre, are there any potential drawdown concerns based on current or future demand that may be of concern with the existing contamination? Please explain.
12. Given the current GMS growth targets and future zoning, will a phase II Environment Site Assessment (ESA) be completed for the former Millbrook Correctional Centre properties to inform this MSP and associated GMS? While our understanding was that a Phase II ESA was not required by the MECP until such a time as a future owner of the property had submitted development plans, given current proposed plans within proximity of the property, as well as the GMS, is it a prudent risk mitigation strategy to complete a Phase II ESA for that property prior to and to inform the MSP?
13. Our understanding is there is a transport pathway bylaw in place for WHPA-A- are there any concerns about the development of transport pathways inWHPA-A or other zones through approved or proposed building permits or plans of subdivision. And if so, how can this be mitigated.
14. Given the known contaminations of the groundwater on the site of the former Millbrook Correction Centre, is there any risk to the drinking water supply to the Millbrook Drinking Water System from current transport pathways or future transport pathways within the WHPA-A, B, or C zones based on future development?
15. Our understanding is that in June 2016 a report entitled “Additional Deep Aquifer and Source Area Investigations, Former Millbrook Correctional Center”, prepared by BluMetric was completed. We also understand that in 2016 Cambium was retained by the Township to complete a peer review of the 2016 BluMetric report, and “of the material from IO and MOECC and prepare technical comments on behalf of the Township to allow them to interpret the risks this contaminant presents, given the proximity of the compound to the Millbrook municipal drinking water supply wells” (Source: The Millbrook Times, Ground

Water Monitoring Continues at Former Correctional Centre retrieved online: https://themillbrooktimes.ca/ground-water-monitoring-continues-former-correctional-centre/). How are or are not the recommended actions from the 2016 Cambium peer review being implemented to address the Master Servicing Study?

16. How will current and future land use within the Millbrook Urban Area effect future water supply? Is there any concern of development exceeding water supply within the Wellhead Protection Area given current plans of subdivision or open space land availability (e.g., property of the former Millbrook Correctional Centre).
17. "Based on future population, employment projections and anticipated rate of growth, the Millbrook water supply would reach 85% of its rated capacity by approximately 2029. By 2051, a capacity of approximately 6214 m3/day would be required."
    a. Hydrogeological investigations required to confirm water quantity & quality, and to confirm ability to supply required future capacity

    What will the basis of this model be?

18. The BCWA is particularly interested in the Baxter Creek and its values. Brook Trout and other trout species are highly valued in our community and beyond (BCWA, TU, Fishing Derby etc.). Baxter Creek is among the best trout creeks in southern Ontario with a self-sustaining native brook trout population. Trout are a highly sensitive coldwater species requiring cold, clean water. Urban development is a primary reason for the 80 percent decline in southern Ontario's brook trout populations over the last 70 years. BCWA is working to improve trout habitat and believe that all future development should be designed to **improve** trout habitat. Stream temperature is crucial given its influence on oxygen depletion, ammonia toxicity, and Brook Trout survival. Discharging effluent through inground filtration, has been deployed successfully at wastewater treatment facilities in both Markdale (Rocky Saugeen River) and Lucknow (Nine Mile River). Other technologies are also available to ensure temperature control.

Given the above and that Alternative 4: expand existing wastewater treatment plant to meet demand has been selected by the consultants, the **BCWA recommends that CM and the consulting team:**

i. Model expected impacts of the expansion of the wastewater treatment plant on trout species in the Baxter Creek, (changes in temperature etc.) and include projected changes in climate into the modelling;

Baxter Creek Watershed Alliance
53 King Street West, Box 325, Millbrook, ON, L0A 1G0
baxtercreekwatershed@gmail.com
www.baxtercreekwatershed.org

ii. Explore and deploy inground filtration if possible and other innovative options to protect and improve trout habitat.

Sincerely,



Chris Grayson, Chair, Baxter Creek Watershed Alliance
Web: www.baxtercreekwatershed.org | Phone: (226) 558-1519 | Email: cgrayson@nexicom.net

Nikash Persaud

To: Rika Law
Subject: RE: Cavan-Monaghan WWMS Plan - BCWA questions and comments

From: Rika Law <rlaw@rvanderson.com>
Sent: Monday, November 13, 2023 12:56 PM
To: Craig Onafrychuk <conafrychuk@hotmail.com>; cgrayson <cgrayson@nexicom.net>
Cc: Graham Whitelaw <graham.whitelaw@gmail.com>; Wayne Hancock <whancock@cavanmonaghan.net>; Noel Kerin <nkerin@kohc.ca>; Jessica Fradley <jfradley@cavanmonaghan.net>; John Connolly <jconnolly@cavanmonaghan.net>; Matthew Grekula <MGrekula@rvanderson.com>; Nikash Persaud <npersaud@rvanderson.com>; Dania Chehab <dchehab@rvanderson.com>; randres@rjandres.com
Subject: RE: Cavan-Monaghan WWMS Plan - BCWA questions and comments

Hi Craig and Chris

Please see attached the responses to the questions/comments provided by BCWA. For ease of review, we had put these into a table format and categorized the comments.

If after reviewing the response, you want to have a meeting to discuss, please advise.

As per my previous email, the Township wants to wrap up the Master Servicing Study as a number of the questions submitted can only be answered once further project specific field investigations are done, and those are to start after the Master Servicing Study is completed. As such, the Township intends to have a Council meeting on Nov 20th to discuss the draft Class EA report on the Master Servicing Study, and once that is done, it will go to the MECP for their draft review. Upon finalization of the Class EA report, there will be a formal 30-day review period for public, agencies, Indigenous communities and interest groups to provide comments.

Once the Master Servicing Study is completed, then the project specific Class EAs and investigations (i.e. additional well supply, water storage, WWTP expansion etc.) can occur and will go through their own public consultation process as well.

Thanks

Rika Law, P.Eng., PMP (she / her)
Team Lead, Principal

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300, Toronto ON M2J 4Z8
t 416 497 8600 ext. 1209 |
LinkedIn | Facebook | Website

From: Rika Law
Sent: Saturday, November 11, 2023 8:05 PM
To: Craig Onafrychuk <conafrychuk@hotmail.com>; randres@rjandres.com
Cc: Graham Whitelaw <graham.whitelaw@gmail.com>; Dania Chehab <dchehab@rvanderson.com>; Wayne Hancock

<whancock@cavanmonaghan.net>; Noel Kerin <nkerin@kohc.ca>; cgrayson <cgrayson@nexicom.net>; Matthew Grekula <MGrekula@rvanderson.com>; Jessica Fradley <jfradley@cavanmonaghan.net>; John Connolly <jconnolly@cavanmonaghan.net>; Nikash Persaud <npersaud@rvanderson.com>
Subject: RE: Cavan-Monaghan WWMS Plan - BCWA questions and comments

Hi Craig

Thanks for following up! You have impeccable timing. We were just wrapping up the responses to your questions and will be sending them out on Monday.
Once you've had a chance to review the responses, we can have a meeting to discuss. It would be great to discuss more about your recent research.
The Township acknowledged your letter's request to meet with them and they are receptive to the idea. Even after the Master Servicing Study finishes, please coordinate with Mr. Hancock, Mr. Connolly and Ms. Fradley (copied in this email) for future meetings with the Township.

We are still waiting for the ACS team to finish their sampling (which they hope to wrap up by end of this year) and move onto the water quality monitoring in Q1 2024. This will align nicely as the preparatory work for the future Class Environmental Assessment of the Wastewater Treatment Plant Expansion, which can happen after the Master Servicing Study is wrapped up.

The intention is to finish up the Master Servicing Study in the next few months, as we are seeing that various submitted questions cannot be answered until more specific field investigations are undertaken/completed (i.e. ACS, hydrogeological investigations, site specific natural heritage assessment etc.). So it would be best to finish the Master Servicing Study (which acts as a road map on what the next steps/future projects are) and then get into those specific Class EAs and field investigations.

Thanks

Rika Law, P.Eng., PMP (she / her)
Team Lead, Principal

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300, Toronto ON M2J 4Z8
t 416 497 8600 ext. 1209 |
LinkedIn | Facebook | Website

From: Craig Onafrychuk <conafrychuk@hotmail.com>
Sent: Saturday, November 11, 2023 9:30 AM
To: Rika Law <rlaw@rvanderson.com>; randres@rjandres.com
Cc: Graham Whitelaw <graham.whitelaw@gmail.com>; Dania Chehab <dchehab@rvanderson.com>; Wayne Hancock <whancock@cavanmonaghan.net>; Noel Kerin <nkerin@kohc.ca>; cgrayson <cgrayson@nexicom.net>; Matthew Grekula <MGrekula@rvanderson.com>
Subject: RE: Cavan-Monaghan WWMS Plan - BCWA questions and comments

Hi Rika and Reg,

Hope you are doing well.

I wanted to follow-up from our meeting in the summer to see where things are at with your research.

Would you be able to meet again so we can discuss the status of your work, the feedback we provided, and also share some of our more recent research?

If there is any interim reporting or updates online you could point me to please let me know.

Thank you,

Craig

Craig Onafrychuk
Secretary-Director
Baxter Creek Watershed Alliance
www.baxtercreekwatershed.org
705-761-0619

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300
Toronto ON M2J 4Z8 Canada
T 416 497 8600 **F** 855 833 4022
rvanderson.com

RVA 205371

Monday, November 13th, 2023

Baxter Creek Watershed Alliance
53 King Street West, Box 325
Millbrook, ON
L0A 1G0

Dear Chris Grayson,

Re: Cavan Monaghan Water and Wastewater Master Servicing Study and Plan
Response to Comments and Questions

Thank you for your comments, interest and engagement with the Water and Wastewater Master Servicing Study (MSS) for the Township of Cavan Monaghan. For clarity and ease of information sharing we have organized your comments and our responses into the response table attached.

Regarding your interest towards meeting with the Township, the Township recommends approaching staff directly to coordinate a further meeting. This process and associated action would not be part of the MSS process.

We thank you again for your comments, interest, and input on the Township of Cavan Monaghan Master Servicing Study.

Yours very truly,

R.V. Anderson Associates Limited
Rika Law, P.Eng., PMP
2001 Sheppard Avenue East, Suite 300
Toronto, ON, M2J 4Z8
Tel: (416) 497 8600 ext. 1209
rlaw@rvanderson.com

Township of Cavan Monaghan, Public Works
Wayne Hancock, P.Eng.
Director of Public Works
988 County Road 10
Millbrook, Ontario, L0A 1G0
Tel: (705) 932-9327
Fax: (705) 932-3458
whancock@cavanmonaghan.net

#	COMMENT	RESPONSE	CATEGORY
1	Many of our Board members are concerned about the intensity of development that has been agreed to by the County/CM. Are these populaton numbers fait accompli? The numbers appear to be driving much of the EA alternatives selecton process.	Regarding concerns about the intensity of development in the Township of Cavan Monaghan, a Growth Management Strategy (GMS) was undertaken by Watson & Associates Economists Ltd - a consulting firm that focuses on planning and land economics as well as municipal finance. The GMS has considered the Provincial mandates (including Minister's Zoning Orders), Township and County Official Plans as well as the Greater Golden Horseshoe Growth Plan (2020) to provide recommendations to the Township on how to grow sustainably. The GMS reviewed population forecasts for the Millbrook area along with the full extent of the Township of Cavan Monaghan. Ultimately, the GMS was presented to Council on August 2nd, 2022, and the Township's official plan will be updated to follow the GMS findings. The Water and Wastewater Master Servicing Study (MSS) rely on the population forecasts of the GMS to plan for servicing as the population and land use forecasts guide the servicing study (to inform how much servicing must expand by to accommodate the growth forecasts). Should the MSS and further investigations and subsequent project specific Class EAs find that the forecasted population cannot be serviced due to certain limitations, the Township will need to reconsider the official plan, GMS and undertake another MSS to consider alternatives. The MSS follows the Master Plan process and should be updated every 5-10 years as development and conditions in the community do change over time.	Development
2	Recommend consultaton beyond public meetings. Please consider a field trip led by CM staff and consultants to the Wellhead protection area, Jail Lands contamination site, existing treatment plant, and various sections of the Baxter Creek to learn about trout habitat and coldwater streams.	Should BCWA wish to have a guided tour from Staff, please approach the Township Staff and something can be coordinated. This process and associated action would not be part of the MSS process.	Engagement
3	How does or does not the Growth Management Strategy (GMS) and the Water Wastewater Servicing Plan align with the current Township of Cavan-Monghan Official Plan policy 3.25 for Watershed Planning? As per policy 3.25 will a watershed plan for the Otonabee Basin and a subwatershed plan for the Baxter Creek (the subwatershed for the Millbrook Drinking Water System) be completed prior to approval of the GMS and Master Servicing Plan (MSP). Will an admendment to policy 3.25 be required or an order by council to either implement or not implement a watershed and subwatershed plan prior to the GMS and MSP. What are the risks of not implementing a watershed and subwatershed plan prior to the GMS and MSP?	Regarding comments on the need for a watershed plan, the City of Peterborough is currently working on a watershed plan and has some information regarding the Millbrook area as well. It would be helpful to have this information supplement the future project specific water supply Class EA along with hydrogeological investigations that will be undertaken. As the situation is complex, one study may inform the other, and vice versa. This is an iterative process based on the available information at the given time. Regarding Cavan Monaghan Official Plan Policy, Policy 3.25 does not necessitate a watershed or subwatershed plan prior to undertaking or implementing the GMS and MSP. A watershed plan does not make land use or infrastructure planning decisions. A watershed plan is meant to help municiaplites make informed decisions and policies regarding watershed health which could include ecosystem restoration and management, land and stormwater management. But there are other more specific investigations that can be used, such as a hydrogeological investigation, that can provide information, especially impacts, specifically for a certain area. The Township will obtain and utilize available information to determine what is suitable to maintain the health of the watershed and aquifer(s). The MSS recommended further hydrogeological studies to confirm the impact to the aquifer(s) if additional water taking occurs.	Watershed Planning

4	How does or does not the GMS and MSP conform with the Township Official Plan policy 7.8 Municipal Water and Wastewater Services sub-policy 7.8.2 Water Supply policies?	Township Official Plan Policy 7.8 and 7.8.2 describes high level goals for the development of new water systems in the Township of Cavan Monaghan. It is the intention of the Township to provide municipal water and wastewater servicing to all development in Millbrook, unless where exempted by the Official Plan policies. It is also the Township's intention to phase the development and associated infrastructure upgrades so that it is within the Township's financial capabilities. As noted in the PIC, and in the future Project File Report, water conservation efforts will be part of the solution, albeit it cannot be a standalone solution without system improvements. The GMS provided a forecast as to what the growth numbers would be so that the MSS (or MSP) could advise what servicing improvements are needed and when, in order to meet such growth forecasts. With this Master Servicing Study (MSS) and subsequent Class EAs, the Township is able to meet these high level goals by planning responsibly - using various evaluation criteria for the servicing alternatives and to present recommendations with the least overall impacts (or at a minimum, mitigable impacts) in technical, social, cultural, environmental and cost aspects.	Development
5	How does or does not the GMS and MSP conform with the Township Official Plan policy 2.1, specially 2.1.1 Residential Growth Targets, “b) Planning for residential growth of approximately 65 residential units per year to the year 2031, with most directed to the Millbrook urban serviced area”? Will an amendment to the OP now be required or an order through council to amend the OP to accommodate the GMS and MSP?	As per the Public Information Centre (PIC) on June 21st, 2023, there are a number of further studies which will be completed to determine growth and implementation. The associated reports may answer this question and will be available to the public/upon request once completed. The Official Plan (OP) is currently being updated to align with the Growth Management Strategy (GMS) prepared by Watson and Associates. As of currently the GMS is the most relevant/accurate growth estimate. The updated County Official Plan is with the Province for approval, and once that is completed, then the Township OP will be amended to match the County OP, so that it is all consistent with the GMS.	Development
6	Has a report been prepared by Trent Conservation Coalition Source Protection Region to provide a conceptual understanding of water availability and use in the Millbrook Settlement area, specifically within the Millbrook Drinking Water Source Protection Area and Baxter Creek subwatershed. Our understanding is that a conceptual water budget has been completed. How will such a report inform the Water and Wastewater Servicing study and plan?	Based on the Trent Conservation Coalition Source Protection Region's Assessment Report, the Millbrook area (which is noted as being in the "Rice1" Tier 1 subwatershed) is net balanced in terms of water budget (Map 3-32) (i.e. not gaining but also not losing), and low stress levels to the Tier 1 surface water (Map 3-33), and low stress levels in the Tier 1 groundwater (Map 3-34). Source: https://trentsourceprotection.on.ca/images/assessment-reports/Trent/Trent_AR_Report_Maps_Chapter__3.4_Tier_1.pdf The conceptual water budget completed may be used as background information for future studies that will be completed as part of future Class Environmental Assessment (EA) processes. To further determine water quality and quantity (i.e. availability) future hydrogeological studies are recommended to occur as part of the future Class EA for water supply. Once the study is completed, the basis and findings can be provided upon request.	Water Budget

7	Has a water budget accounted for all the water that moves into and out of the Baxter Creek subwatershed (including evaporation, precipitation, and runoff) as well as the movement of water within the watershed (including groundwater recharge and infiltration)? How might water budget be impacted by climate change through 2051. Is climate change being considered and modelled? How has/will such modelling inform the Water and Wastewater Servicing study and plan?	The report prepared by Trent Conservation Coalition Source Protection Region addresses/provides a water budget and concerns about climate change on a high-level. This includes providing comments on changes to local water features that are expected due to climate change and general characteristics of the water features in the region. That being said, none of these comments are specific to Baxter Creek or the Millbrook area, and instead use sampling from these areas to inform a whole picture of the region. As per the Public Information Centre on June 21st, 2023, further Class Environmental Assessment (EA) studies are recommended to confirm conditions and viability of recommended solutions. As part of these Class EA studies, further studies would occur specifically on the Baxter Creek and potential Millbrook well areas. Furthermore, in these studies, all alternative and preferred solutions will be evaluated against environmental criteria where the effect on climate change is a key component. Solutions which provide the least negative impacts on climate, most resilience against climate change impacts, and/or mitigation to climate change related issues are preferred. The report prepared by Trent Conservation Coalition Source Protection Region may be utilized as background information in future studies/reports. The most relevant and up-to-date information will be used at the time of study.	Water Budget
8	Has a higher Tier 2 and Tier 3 Water Budget been completed for the Baxter Creek subwatershed and/or the Trent Source Protection Region? How will this information inform this study? If a tier 2 and 3 study have not been completed, we recommend that these studies be completed as part of this study and plan process.	Refer to the answer for question #6 & 7. The 2022 Assessment Report from the Trent Conservation Coalition Source Protection Region did not complete a Tier 2 or Tier 3 water budget for the Rice sub watershed since it had low stress levels in Tier 1 water budget. The 2022 Assessment Report stated that "Most of the subwatersheds were found to have a low stress level in the Tier 1 water budget. The subwatersheds with municipal wells or intakes found to have a moderate or significant stress level were...Lindsay, Crowe 4, Lake Ontario 1 subwatershed associated with Colborne municipal wells, and Lake Ontario 3 subwatershed associated with Bright municipal wells. Tier 2 water budgets were prepared for these four subwatersheds using complex numberical models to confirm or negate the stress levels assigned in the Tier 1 analysis...No Tier 3 analyses are required and no quantity threats are identified in the Trent River watershed." Given the results from the 2022 Assessment Report, Trent Conservation Coalition Source Protection Region did not deem it necessary to conduct a further Tier 2 or Tier 3 water budget on the Rice watershed.	Water Budget
9	If a Tier 2 or Tier 3 water budget is not being completed based on the stress level of the watershed, given current growth and future growth forecasted, have current or future demand scenarios been compared to the conceptual water budget model for the Baxter Creek subwatershed? Are there any supply and demand concerns based on future growth scenarios? (a.) Millbrook Urban Area 2021 population 2,558 total employees 970 (b.) Millbrook Urban Area 2051 population 10,455 total employees 3,983	Refer to the answer for question #6, 7 and 8	Water Budget

10	Under the current groundwater conceptual water budget stress assessment, is future growth including commercial demand considered?	Refer to the answer for question #6, 7 and 8. The available 2022 Assessment Report does not (and cannot) go into detail about the immediate Millbrook aquifer. As such, the Township will be undertaking hydrogeological investgiations (after the MSS), which will include performing pump test on existing well sites and possible test well sites to confirm what is sustainable for the specific aquifer. This will inform whether or not the forecasted water demands can be accommodated.	Water Budget
11	Given the known subsurface and groundwater contamination in the Millbrook Well Head Protection Areas B zone, from the activities at the former Millbrook Correctional Centre, are there any potential drawdown concerns based on current or future demand that may be of concern with the existing contamination? Please explain.	Concentrations of PCE were documented in the annual testing on the Infrastructure Ontario (IO) Millbrook Correctional Centre lands conducted by GHD from 2018-2022. There are three layers to the Millbrook aquifer. Municipal well water is drawn from level 3 of the aquifer and layer 2 is an aquitard which restricts the movement of water up or down between layers 1 and 3. As of GHD's most recent report in 2022, PCE was not detected at concentrations more than 1.6 micrograms per liter (which is the 2011 Table 2 Generic Standard for Potable Groundwater Conditions) at all monitoring wells, in all three levels of the aquifer. In addition to this, there have been no detections of PCE or any other substances of concern in the annual municipal well reports to date. During the future hydrogeological investigations near the existing Millbrook wells or the Millbrook Correctional Centre, water quality samples will be taken and tested, including for PCE.	IO Lands
12	Given the current GMS growth targets and future zoning, will a phase II Environment Site Assessment (ESA) be completed for the former Millbrook Correctional Centre properties to inform this MSP and associated GMS? While our understanding was that a Phase II ESA was not required by the MECP untill such a time as a future owner of the property had submitted development plans, given current proposed plans within proximity of the property, as well as the GMS, is it a prudent risk mitigation strategy to complete a Phase II ESA for that property prior to and to inform the MSP?	Township staff are currently working with the MECP and Infrastructure Ontario to determine future monitoring plans. The Township, MECP and Infrastructure Ontario are working to verify that there are no negative impacts to the Millbrook wellfield.	IO Lands
13	Our understanding is there is a transport pathway bylaw in place for WHPA-A - are there any concerns about the development of transport pathways in WHPA-A or other zones through approved or proposed building permits or plans of subdivision. And if so, how can this be mitigated.	This is being reviewed by ORCA and Township as part of the subdivision application. ORCA is the Risk Management Office for the Township and they will take care of reviewing the mitigation measures proposed by the subdivision	Development
14	Given the known contaminations of the groundwater on the site of the former Millbrook Correction Centre, is there any risk to the drinking water supply to the Millbrook Drinking Water System from current transport pathways or future transport pathways within the WHPA-A, B, or C zones based on future development?	Refer to the answer for question #11	IO Lands

15	Our understanding is that in June 2016 a report entitled “Additional Deep Aquifer and Source Area Investigations, Former Millbrook Correctional Center”, prepared by BluMetric was completed. We also understand that in 2016 Cambium was retained by the Township to complete a peer review of the 2016 BluMetric report, and “of the material from IO and MOECC and prepare technical comments on behalf of the Township to allow them to interpret the risks this contaminant presents, given the proximity of the compound to the Millbrook municipal drinking water supply wells” (Source: The Millbrook Times, Ground Water Monitoring Continues at Former Correctional Centre retrieved online: https://themillbrooktimes.ca/ground-water-monitoring-continues-former-correctional-centre/). How are or are not the recommended actions from the 2016 Cambium peer review being implemented to address the Master Servicing Study?	A report studying the groundwater on the Millbrook Correctional Facility property was completed in 2022 (GHD, 2022). As per the findings of the report, PCE was most not detected in groundwater samples in the Millbrook Correctional Facility property, and where it was detected, it was at concentrations less than the 1.6 µg/L standard. There have been no detections of PCE in the Millbrook municipal well to date.	IO Lands
16	How will current and future land use within the Millbrook Urban Area effect future water supply? Is there any concern of development exceeding water supply within the Wellhead Protection Area given current plans of subdivision or open space land availability (e.g., property of the former Millbrook Correctional Centre).	Additional water sources will be required to accommodate future growth. Hydrogeological investigations are planned in the future to confirm what is sustainable water taking from the current municipal well field, and from other potential groundwater locations. These are being undertaken outside of the MSS but will inform the future water supply Class EA.	Development
17	“Based on future population, employment projections and anticipated rate of growth, the Millbrook water supply would reach 85% of its rated capacity by approximately 2029. By 2051, a capacity of approximately 6214 m3/day would be required.” (a.) Hydrogeological investigations required to confirm water quantity & quality, and to confirm ability to supply required future capacity. What will the basis for this model be?	As per the Public Information Centre (PIC) on June 21st, 2023, the future hydrogeological study will be conducted as part of the background research for the associated Class EA for water supply in the Township of Cavan Monaghan. Currently, a hydrogeological workplan is being prepared to inform the requirements of the hydrogeological study; the workplan is being completed outside the scope of the Master Servicing Study (MSS). Upon completion, the associated hydrogeological report may answer this question.	Development

18	The BCWA is particularly interested in the Baxter Creek and its values. Brook Trout and other trout species are highly valued in our community and beyond (BCWA, TU, Fishing Derby etc.). Baxter Creek is among the best trout creeks in southern Ontario with a self-sustaining native brook trout population. Trout are a highly sensitive coldwater species requiring cold, clean water. Urban development is a primary reason for the 80 percent decline in southern Ontario's brook trout populations over the last 70 years. BCWA is working to improve trout habitat and believe that all future development should be designed to improve trout habitat. Stream temperature is crucial given its influence on oxygen depletion, ammonia toxicity, and Brook Trout survival. Discharging effluent through inground filtration, has been deployed successfully at wastewater treatment facilities in both Markdale (Rocky Saugeen River) and Lucknow (Nine Mile River). Other technologies are also available to ensure temperature control. Given the above and that Alternative 4: expand existing wastewater treatment plant to meet demand has been selected by the consultants, the BCWA recommends that CM and the consulting team: (i.) Model expected impacts of the expansion of the wastewater treatment plant on trout species in the Baxter Creek, (changes in temperature etc.) and include projected changes in climate into the modelling; (ii.) Explore and deploy inground filtration if possible and other innovative options to protect and improve trout habitat.	The ACS that is currently being undertaken will be looking at parameters such as temperatures, pH, phosphorus and nitrate concentrations etc. The ACS will also be undertaking a benthic study. Once the study is completed, anticipated for early/mid 2024, the Township and BCWA can meet to discuss the possibility of Baxter Creek to take on the forecasted effluent flows and if need be, explore other possible receivers for the future effluent. However, please note that the inground filtration option has its own limitations and is untested in the flowrates that are being considered for Millbrook. The wastewater treatment capacity for Markdale and Lucknow are half of what Millbrook currently has and significantly less than what Millbrook is forecasted to have. During the future Millbrook WWTP Expansion Schedule C Class EA, an evaluation for various types of design considerations will be made. This may include consideration on where and how effluent will be discharged if the ACS investigations note that Baxter Creek is not able to take all of the forecasted effluent. In addition, the expansion of the WWTP will require a Schedule C Class EA, which will include a natural environmental investigation of the proposed location and the nearby habitat, including Baxter Creek (receiver of the effluent). This, along with the findings from the ACS, will inform on the impacts of the aquatic species and aquatic habitat of Baxter Creek. Please note that there may be many contributing factors to temperature changes to Baxter Creek - some of which may be natural while others are anthrogenic. Not all temperature changes to Baxter Creek will be able to be attributed to the effluent discharge of the WWTP.	Watershed Planning

Nikash Persaud

From: Rika Law
Sent: December 6, 2023 11:14 AM
To: cgrayson
Cc: Craig Onafrychuk; Noel Kerin; 'Graham Whitelaw'; Nikash Persaud
Subject: RE: Cavan-Monaghan WWMS Plan - BCWA questions and comments

Hi Chris

Thank you for the comments. We have received it and will work with the Township to provide responses.

Please copy my colleague Nikash as well in the future in case I am away.

Thanks!

Rika Law, P.Eng., PMP (she / her)
Team Lead, Principal

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300, Toronto ON M2J 4Z8
t 416 497 8600 ext. 1209 |
LinkedIn | Facebook | Website

From: cgrayson <cgrayson@nexicom.net>
Sent: Tuesday, December 5, 2023 6:46 PM
To: Rika Law <rlaw@rvanderson.com>
Cc: Craig Onafrychuk <conafrychuk@hotmail.com>; Noel Kerin <nkerin@kohc.ca>; 'Graham Whitelaw' <graham.whitelaw@gmail.com>
Subject: Cavan-Monaghan WWMS Plan - BCWA questions and comments

Good afternoon Rika,
I am submitting the attached on behalf of Baxter Creek Watershed Alliance.
Should you have any questions please reach out to our board secretary Craig.

Sincerely,

Chris

Chris Grayson
Board Chair

Baxter Creek Watershed Alliance

Sent from my Galaxy

Baxter Creek Watershed Alliance
53 King Street West, Box 325, Millbrook, ON, L0A 1G0
baxtercreekwatershed@gmail.com
www.baxtercreekwatershed.org

#	Comment	Response	BCWA Comment 2	Category
			Preliminary response from RVA: "Likely from a Source Water Protection Planning point of view, Trent Conservation Coalition and ORCA would need to be involved if further water budgeting is required as it is too large of a scale for the Township to undertake on their own. And it may be more productive to undertake the groundwater explorations first (when the well supply Class EA occurs) to even see what is feasible from a sustainable aquifer point of view before undertaking the high level water budget exercise (if required)."	
3	How does or does not the Growth Management Strategy (GMS) and the Water Wastewater Servicing Plan align with the current Township of Cavan-Monghan Official Plan policy 3.25 for Watershed Planning? As per policy 3.25 will a watershed plan for the Otonabee Basin and a subwatershed plan for the Baxter Creek (the subwatershed for the Millbrook Drinking Water System) be completed prior to approval of the GMS and Master Servicing Plan (MSP). Will an amendment to policy 3.25 be required or an order by council to either implement or not implement a watershed	Regarding comments on the need for a watershed plan, the City of Peterborough is currently working on a watershed plan and has some information regarding the Millbrook area as well. It would be helpful to have this information supplement the future project specific water supply Class EA along with hydrogeological investigations that will be undertaken. As the situation is complex, one study may inform the other, and vice versa. This is an iterative process based on the available information at the given time. Regarding Cavan Monaghan Official Plan Policy, Policy 3.25 does not necessitate a watershed or	Other than a small area of the outlet of the Jackson Creek subwatershed and the Otonabee River watershed no other watersheds within the City of Peterborough city limits are in the Cavan-Monaghan Township. It's unclear how the City's watershed planning process will inform the Millbrook settlement area. Would it be correct to assume that although a watershed or subwatershed plan is not required prior to undertaking a GMS and MSP, would it not be necessary to have a watershed plan or sub-watershed plan/tributary plan to inform planning and development? Conservation Ontario (2003) "Watershed Management in Ontario: Lessons Learned and Best Practices" indicate "In practice, however,	Watershed Planning

Baxter Creek Watershed Alliance
53 King Street West, Box 325, Millbrook, ON, L0A 1G0
baxtercreekwatershed@gmail.com
www.baxtercreekwatershed.org

	and subwatershed plan prior to the GMS and MSP. What are the risks of not implementing a watershed and subwatershed plan prior to the GMS and MSP?	subwatershed plan prior to undertaking or implementing the GMS and MSP. A watershed plan does not make land use or infrastructure planning decisions. A watershed plan is meant to help municipalities make informed decisions and policies regarding watershed health which could include ecosystem restoration and management, land and stormwater management. But there are other more specific investigations that can be used, such as a hydrogeological investigation, that can provide information, especially impacts, specifically for a certain area. The Township will obtain and utilize available information to determine what is suitable to maintain the health of the watershed and aquifer(s). The MSS recommended further hydrogeological studies to confirm the impact to the aquifer(s) if additional water taking occurs.	because of financial constraints many municipalities and conservation authorities develop subwatershed plans first and later integrate them into an overall watershed plan. Likewise, tributary plans may be developed before subwatershed plans are created" The idea here is that the study can be tailored to resources. We agree with your comment that a watershed plan is intended to inform decision and policies regarding watershed health. Watershed studies (at the watershed,, subwatershed level or tributary levels) also "identify existing and proposed land uses; identify areas where development may be permitted; provide direction for Best Management Practices (e.g. agriculture, aggregate extraction, development servicing, woodlots etc)" (Conservation Ontario, 2003). Furthermore, these types of studies are critical in establishing baseline conditions. How does the Oak Ridges Moraine Conservation Plan (ORMCP) 2017 relate to the watershed planning process, specific to a watershed water budget? As per the ORMCP Section 24(1): "Every upper-tier municipality and single-tier municipality shall have a watershed plan that meets the requirements of subsection (3) for every watershed whose streams originate within the municipality's area of jurisdiction." With a water budget and water conservation plan being the first requirement, and considering that the Baxter Creek, Squirrel Creek, and Cavan Creek, are all	

Baxter Creek Watershed Alliance
53 King Street West, Box 325, Millbrook, ON, L0A 1G0
baxtercreekwatershed@gmail.com
www.baxtercreekwatershed.org

			subwatersheds with headwater streams originating from the Oak Ridges Moraine, would this stipulation from the ORMCP not necessitate having a watershed plan prior to and to ensure conformance to water the ORMCP calls a “major development” as per section 24(4)a: “Major development is prohibited unless, (a) the watershed plan for the relevant watershed, prepared in accordance with subsection (3), has been completed;” Note: Major Development is defined in the ORMCP as “the creation of four or more lots”. In line with existing land use policies and best practice, BCWA supports watershed planning as a foundation for land use planning and recommends that the municipality, at the very least, carry out a tributaries study for Baxter, Squirrel and Cavan Creeks. We believe these types of study are critical to examining cumulative impacts of development including servicing into the future.	
11	Given the known subsurface and groundwater contamination in the Millbrook Well Head Protection Areas B zone, from the activities at the former Millbrook Correctional Centre, are there any potential drawdown concerns based on current or future demand that may be of concern with the existing contamination? Please explain.	Concentrations of PCE were documented in the annual testing on the Infrastructure Ontario (IO) Millbrook Correctional Centre lands conducted by GHD from 2018-2022. There are three layers to the Millbrook aquifer. Municipal well water is drawn from level 3 of the aquifer and layer 2 is an aquitard which restricts the movement of water up or down between layers 1 and 3. As of GHD’s most recent report in 2022, PCE was not detected at concentrations more than 1.6 micrograms per liter (which is the 2011 Table 2	Thanks for the information on PCE. The question remains, Are there any potential drawdown concerns based on current and future demand that may cause concern with the existing contamination? Please explain. Does the conceptual groundwater layering described in your response align with the Natural Resources Canada aquifer and aquitard mapping provide in Appendix 1? This is open data downloaded from the Groundwater Information Network (GIN).	IO Lands

Baxter Creek Watershed Alliance
53 King Street West, Box 325, Millbrook, ON, L0A 1G0
baxtercreekwatershed@gmail.com
www.baxtercreekwatershed.org

		Generic Standard for Potable Groundwater Conditions) at all monitoring wells, in all three levels of the aquifer. In addition to this, there have been no detections of PCE or any other substances of concern in the annual municipal well reports to date. During the future hydrogeological investigations near the existing Millbrook wells or the Millbrook Correctional Centre, water quality samples will be taken and tested, including for PCE.		
12	Given the known contaminations of the groundwater on the site of the former Millbrook Correction Centre, is there any risk to the drinking water supply to the Millbrook Drinking Water System from current transport pathways or future transport pathways within the WHPA-A, B, or C zones based on future development?	Township staff are currently working with the MECP and Infrastructure Ontario to determine future monitoring plans. The Township, MECP and Infrastructure Ontario are working to verify that there are no negative impacts to the Millbrook wellfield.	Please provide us with any information available on transport pathways that may be relevant to our concerns with Millbrook CorrectionCentre contamination.	IO Lands
14	Given the known contaminations of the groundwater on the site of the former Millbrook Correction Centre, is there any risk to the drinking water supply to the Millbrook Drinking Water System from current transport pathways or future transport pathways within the WHPA-A, B, or C zones based on future development?	Refer to the answer for question #11	The answer to question #11 is in reference to historical activities and historical contaminants of concerns (also known as conditions). Our question here was in regards to current and proposed transport pathways within the WHPA-A, B, or C zones or from activities associated with future development activities or land use activities as a result of development.	IO Lands
15	Our understanding is that in June 2016 a report entitled “Additional Deep Aquifer and Source Area Investigations, Former Millbrook Correctional Center”, prepared	A report studying the groundwater on the Millbrook Correctional Facility property was completed in 2022 (GHD, 2022). As per the findings of the report, PCE was most not	Could we please obtain copies of the GHD, 2022 reports as well as the following documents:	IO Lands

	by BluMetric was completed. We also understand that in 2016 Cambium was retained by the Township to complete a peer review of the 2016 BluMetric report, and "of the material from IO and MOECC and prepare technical comments on behalf of the Township to allow them to interpret the risks this contaminant presents, given the proximity of the compound to the Millbrook municipal drinking water supply wells" (Source: The Millbrook Times, Ground Water Monitoring Continues at Former Correctional Centre retrieved online: https://themillbrooktimes.ca/ground-water-monitoring-continues-former-correctionalcentre/). How are or are not the recommended actions from the 2016 Cambium peer review being implemented to address the Master Servicing Study?	detected in groundwater samples in the Millbrook Correctional Facility property, and where it was detected, it was at concentrations less than the 1.6 µg/L standard. There have been no detections of PCE in the Millbrook municipal well to date.	• SLR Consultants (2010) Former Millbrook Correctional Centre, 706 County Road 21, Millbrook, Ontario, Phase I Environmental Site Assessment Report. • Inspec-Sol (2011a) Phase I Environmental Site Assessment Update, Former Millbrook Correctional Facility, Millbrook, Ontario • Inspec-Sol (2011b) Phase II Environmental Site Assessment, Former Millbrook Correctional Centre, Millbrook, Ontario • Inspec-Sol (2012) Delineation Phase II Environmental Site Assessment, Former Millbrook Correctional Facility, Millbrook, Ontario • Cultural Heritage Assessment Report: Millbrook Correctional Centre (N00596), 706 County Rd 21, Millbrook, Ontario FINAL REPORT (ContentWorks, 2006)	
16	How will current and future land use within the Millbrook Urban Area effect future water supply? Is there any concern of development exceeding water supply within the Wellhead Protection Area given current plans of subdivision or open space land availability (e.g., property of the former Millbrook Correctional Centre).	Additional water sources will be required to accommodate future growth. Hydrogeological investigations are planned in the future to confirm what is sustainable water taking from the current municipal well field, and from other potential groundwater locations. These are being undertaken outside of the MSS but will inform the future water supply Class EA.	If it has already been deemed that additional water sources will be required to accommodate future growth would it not then be logical (and required under the ORMCP) to implement a watershed plan, a water conservation plan, and associated water budget to inform major developments either in progress, proposed, or projected under the GMS? Or is "water source" defined not as the source aquifer/water but the well field (i.e., wells, water treatment, and water distribution infrastructure)? Are surface water sources also being considered and if so what water bodies are being considered for surface water intakes? Questions	Development

Baxter Creek Watershed Alliance
53 King Street West, Box 325, Millbrook, ON, L0A 1G0
baxtercreekwatershed@gmail.com
www.baxtercreekwatershed.org

			such as these require watershed studies to inform infrastructure planning. Is there any potential impacts of new water sources (wells) on the existing artesian spring well that is located at the head of Station Trail on King Street West? This artesian well is used by local community members especially during period of hydro black outs when rural residential wells cannot be operated. If there will be impacts how would this be mitigated?	
18	The BCWA is particularly interested in the Baxter Creek and its values. Brook Trout and other trout species are highly valued in our community and beyond (BCWA, TU, Fishing Derby etc.). Baxter Creek is among the best trout creeks in southern Ontario with a self-sustaining native brook trout population. Trout are a highly sensitive coldwater species requiring cold, clean water. Urban development is a primary reason for the 80 percent decline in southern Ontario's brook trout populations over the last 70 years. BCWA is working to improve trout habitat and believe that all future development should be designed to improve trout habitat. Stream temperature is crucial given its influence on oxygen depletion, ammonia toxicity, and Brook Trout survival. Discharging effluent through inground filtration, has been deployed successfully at wastewater treatment	The ACS that is currently being undertaken will be looking at parameters such as temperatures, pH, phosphorus and nitrate concentrations etc. The ACS will also be undertaking a benthic study. Once the study is completed, anticipated for early/mid 2024, the Township and BCWA can meet to discuss the possibility of Baxter Creek to take on the forecasted effluent flows and if need be, explore other possible receivers for the future effluent. However, please note that the inground filtration option has its own limitations and is untested in the flowrates that are being considered for Millbrook. The wastewater treatment capacity for Markdale and Lucknow are half of what Millbrook currently has and significantly less than what Millbrook is forecasted to have. During the future Millbrook WWTP Expansion Schedule C Class EA, an evaluation for various types of design considerations will be made. This may include consideration on where and how effluent will be discharged if the ACS	Please note that BCWA is currently undertaking a benthics study of Baxter Creek subwatershed as of fall 2023. This is the first stage of a multi-year benthics study being completed through Trent University School of the Environment as a multi-year Community-based Research project. BCWA is willing and interested in collaborating and sharing data with the township from this study as well as our other ongoing environmental studies.	Watershed Planning

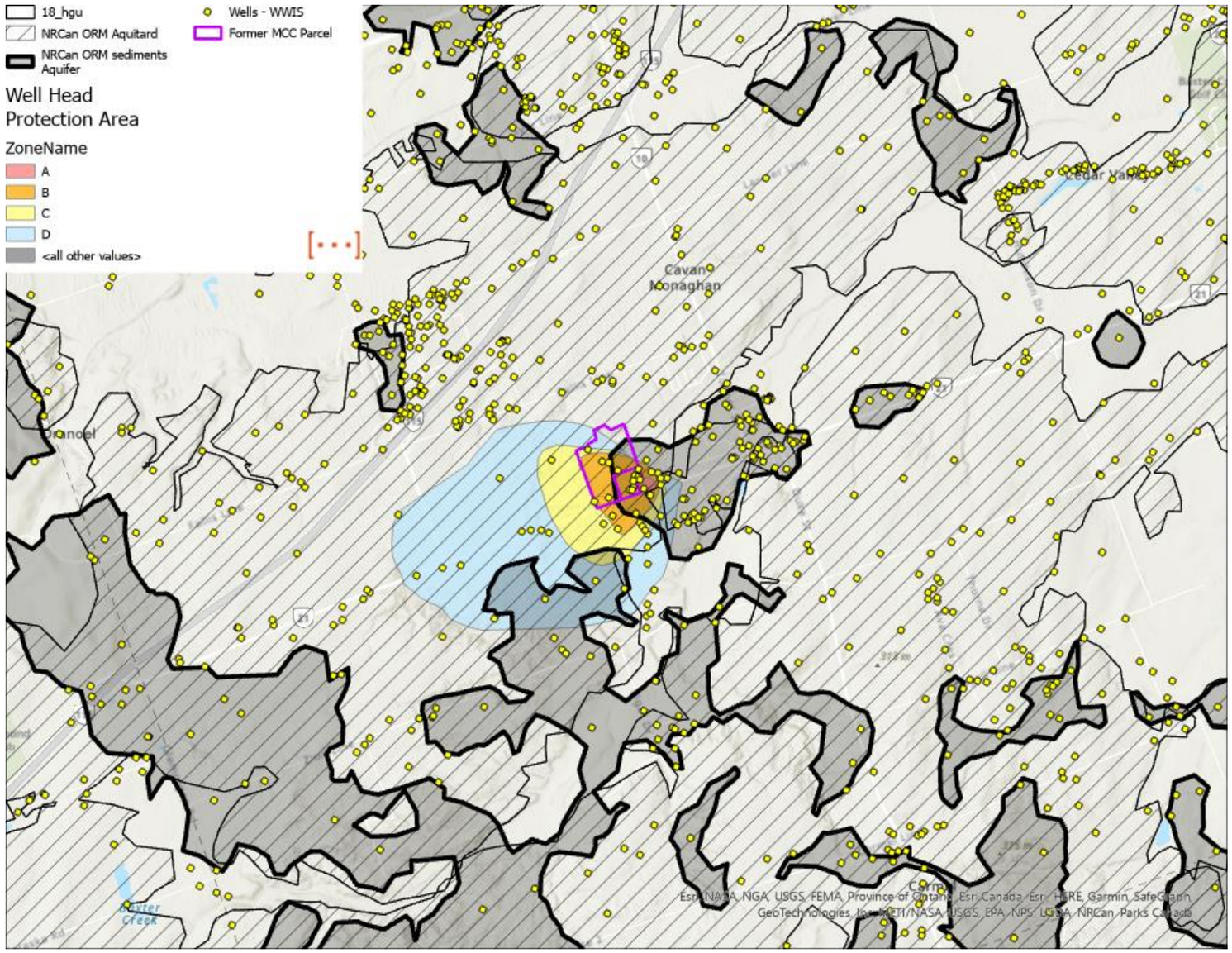
Baxter Creek Watershed Alliance
53 King Street West, Box 325, Millbrook, ON, L0A 1G0
baxtercreekwatershed@gmail.com
www.baxtercreekwatershed.org

	facilities in both Markdale (Rocky Saugeen River) and Lucknow (Nine Mile River). Other technologies are also available to ensure temperature control. Given the above and that Alternative 4: expand existing wastewater treatment plant to meet demand has been selected by the consultants, the BCWA recommends that CM and the consulting team: (i.) Model expected impacts of the expansion of the wastewater treatment plant on trout species in the Baxter Creek, (changes in temperature etc.) and include projected changes in climate into the modelling; (ii.) Explore and deploy inground filtration if possible and other innovative options to protect and improve trout habitat.	investigations note that Baxter Creek is not able to take all of the forecasted effluent. In addition, the expansion of the WWTP will require a Schedule C Class EA, which will include a natural environmental investigation of the proposed location and the nearby habitat, including Baxter Creek (receiver of the effluent). This, along with the findings from the ACS, will inform on the impacts of the aquatic species and aquatic habitat of Baxter Creek. Please note that there may be many contributing factors to temperature changes to Baxter Creek - some of which may be natural while others are anthropogenic. Not all temperature changes to Baxter Creek will be able to be attributed to the effluent discharge of the WWTP.		

Baxter Creek Watershed Alliance
53 King Street West, Box 325, Millbrook, ON, L0A 1G0
baxtercreekwatershed@gmail.com
www.baxtercreekwatershed.org

Appendix 1: Groundwater mapping sourced from Natural Resources Canada

Baxter Creek Watershed Alliance
53 King Street West, Box 325, Millbrook, ON, L0A 1G0
baxtercreekwatershed@gmail.com
www.baxtercreekwatershed.org



Nikash Persaud

From: Dania Chehab
Sent: February 21, 2024 1:34 PM
To: cgrayson
Cc: Craig Onafrychuk; Noel Kerin; 'Graham Whitelaw'; Wayne Hancock; Rika Law; Nikash Persaud
Subject: FW: Cavan-Monaghan WWMS Plan - BCWA questions and comments
Attachments: 205371-20240220 - BCWA Response 2 - vF.pdf

Good afternoon Chris,

Thank you for sharing your comments and questions on behalf of BCWA.

We have enclosed project correspondence regarding your follow up questions. As the MSS is a high-level document, additional investigations and studies would need be completed in the future for many of the projects identified in the MSS. To meet the Environmental Assessment Act, these studies would need to be completed before proceeding to construction. We encourage your continued participation through these future studies.

Thanks again,

Dania

Dania Chehab, P.Eng., M.Eng., ENV SP (she/her)
Project Manager, Water & Wastewater

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300, Toronto ON M2J 4Z8
t 416 497 8600 ext. 1456
LinkedIn | Facebook | Website

From: cgrayson <cgrayson@nexicom.net>
Sent: Tuesday, December 5, 2023 6:46 PM
To: Rika Law <rlaw@rvanderson.com>
Cc: Craig Onafrychuk <conafrychuk@hotmail.com>; Noel Kerin <nkerin@kohc.ca>; 'Graham Whitelaw' <graham.whitelaw@gmail.com>
Subject: Cavan-Monaghan WWMS Plan - BCWA questions and comments

Good afternoon Rika,
I am submitting the attached on behalf of Baxter Creek Watershed Alliance.
Should you have any questions please reach out to our board secretary Craig.

Sincerely,

Chris

Chris Grayson
Board Chair
Baxter Creek Watershed Alliance

Sent from my Galaxy

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300
Toronto ON M2J 4Z8 Canada
T 416 497 8600 **F** 855 833 4022
rvanderson.com

RVA 205371

February 20, 2024

Chris Grayson
Board Chair
Baxter Creek Watershed Alliance
53 King Street West, Box 325
Millbrook, ON, L0A 1G0
baxtercreekwatershed@gmail.com

Dear Mr. Grayson,

Re: Township of Cavan Monaghan Water and Wastewater Master Servicing Study (MSS)
Response to MSS Council Presentation Follow-Up Questions

Thank you for your comments regarding the Township of Cavan Monaghan Water and Wastewater Master Servicing Study (MSS) project.

The Water and Wastewater MSS is a high-level infrastructure planning process that is focused specifically on municipal water and wastewater infrastructure services required to support growth to 2051. Water is specific to drinking water supply and distribution while wastewater is specific to sanitary sewage collection and treatment; stormwater is not included with this MSS.

The growth referenced in the Water and Wastewater MSS is documented in the Growth Management Strategy (GMS), along with the rationale for land use planning. Briefly, this growth was allocated to the Township by the County of Peterborough (the upper-tier municipality) and mandated by the Province of Ontario.

As a lower-tier municipality, the Township of Cavan Monaghan is not designated as responsible for activities related to watershed planning and subwatershed studies under the Oak Ridges Moraine Conservation Plan (ORMCP). This responsibility is designated to upper-tier and single-tier municipalities. In the case of Baxter, Squirrel, and Cavan Creeks, the upper-tier municipality is the County of Peterborough.

As requested, we have enclosed the 2021-2022 Groundwater Monitoring Report (GHD, April 2022) for the Infrastructure Ontario (IO) lands, formerly the Millbrook Correctional Centre. Unfortunately, the Township does not have the other reports requested in your correspondence.

As the Water and Wastewater MSS was completed as a high-level infrastructure planning document, many of the projects identified through the MSS are subject to additional studies and investigations before proceeding to implementation. These additional studies and investigations are required to

CANADA'S BEST MANAGED COMPANIES Platinum member

fulfill regulatory requirements, such as the Ontario Environmental Assessment Act, Water Resources Act, and Environmental Protection Act.

We have summarized the future studies and investigations that will be completed outside of the MSS in the table below.

Infrastructure Component	Preferred Servicing Approach
Water Supply	**Increase the existing groundwater well supply through new supply wells or by increasing the draw from the existing well supply.** Additional study, including hydrogeological investigation, is required to confirm feasibility and suitability of this approach and a further Schedule B Class EA, or an Archaeological Screening Process (ASP) will be completed by the Township in the future, prior to construction.
Water Storage	**Increase water storage in Millbrook by adding an additional water storage facility in a new location.** To confirm the location, storage type and capacity of the future storage solution, a Schedule B Class EA will be completed by the Township in the future, prior to construction. **Increase the capacity of the existing Millbrook Booster Pumping Station (BPS) to service development growth near the existing standpipe.** This project is exempt from the Class EA process and can move forward immediately to the design/implementation phase.
Wastewater Treatment	**Increase wastewater treatment capacity in Millbrook by expanding the Millbrook Wastewater Treatment Plant (WWTP).** The Township will complete a future Schedule C Class EA to confirm feasibility, treatment technology, and footprint requirements for this expansion. An Assimilative Capacity Study (ACS) will also be completed to inform the future Schedule C Class EA and environmental approvals.
Wastewater Conveyance	**Convey wastewater from the North Catchment of Millbrook via the Tupper Street SPS to the East Sewer Shed of the Millbrook WWTP.** This project is exempt from the Class EA process and can move forward immediately to the design/implementation phase.

Once again, we thank you for your comments regarding the Township's Water and Wastewater MSS. As the project is concluding, this will be the last correspondence through the MSS framework. The Notice of Completion and final Water and Wastewater MSS Report will be published in the coming weeks.

We encourage you to participate in the upcoming future studies and thank you again for your interest and participation in the MSS project.

Yours very truly,

R.V. Anderson Associates Limited
Dania Chehab, P.Eng., M.Eng., ENV SP
Project Manager
2001 Sheppard Avenue East, Suite 300
Toronto, ON, M2J 4Z8
Tel: (416) 497 8600 ext.
DChehab@rvanderson.com

Township of Cavan Monaghan, Public Works
Wayne Hancock, P.Eng.
Director of Public Works
988 County Road 10
Millbrook, ON, L0A 1G0
Tel: (705) 932 9327
WHancock@cavanmonaghan.net

Correspondence After Public Information Centre

~

Indigenous Communities

Nikash Persaud

From: Dania Chehab
Sent: December 21, 2023 3:29 PM
To: tsimpson@alderville.ca; thundercloudkwe@alderville.ca; dawn.marie@alderville.ca; nsawyer@alderville.ca; jmarsden@alderville.ca; afnreception@alderville.ca; cwilson@alderville.ca; jsmoke@alderville.ca
Cc: inquiries@williamstreatiesfirstnations.ca; Wayne Hancock; Rika Law; Nikash Persaud
Subject: 205371 - Cavan Monaghan Master Servicing Study - Project Update & Stage 1 AA - Alderville First Nation
Attachments: 205371-20231221 - Cavan Monaghan MSS Project Update - Alderville First Nation.pdf

Categories: Filed by Newforma

Good afternoon Chief and Councillors,

Please find enclosed information and project update for the Township of Cavan Monaghan Master Servicing Study (MSS). This study focuses on water and wastewater servicing of the Millbrook Urban Area to the planning horizon of 2051, in line with the Township's Growth Management Strategy (GMS).

The information package also includes a copy of the Draft Stage 1 Archaeological Assessment Report prepared by Archaeological Services Inc. (ASI).

We appreciate your input and look forward to hearing from you.
We are also happy to arrange a meeting or call to discuss, at your convenience.

Warmest regards,
Dania

Dania Chehab, P.Eng., M.Eng., ENV SP (she/her)

Project Manager, Water & Wastewater

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300, Toronto ON M2J 4Z8
t 416 497 8600 ext. 1456 |
LinkedIn | Facebook | Website

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300
Toronto ON M2J 4Z8 Canada
T 416 497 8600 **F** 855 833 4022
rvanderson.com

RVA 205371

Thursday, December 21, 2023

Alderville First Nation
11696 Second Line, P.O. Box 46, RR #4
Alderville, ON
K0K 2X0

Re: Project Information & Update
Township of Cavan Monaghan Water/Wastewater Master Servicing Study

We are writing to provide you with an update on the Township of Cavan Monaghan Master Servicing Study (MSS) Class Environmental Assessment (EA) project. The MSS is being completed as a high-level study (Approach #1) under the master planning framework of the Municipal Class EA Process and will include the following phases of the Process:

- Completion of Phase 1: Definition of Problem or Opportunity
- Portion of Phase 2: Identification and Evaluation of Alternative Solutions

Under an Approach #1 MSS, additional Municipal Class EAs will need to be completed in the future, outside of this MSS, for works identified as Schedule B and C Projects.

Background

The purpose of this study is to review and assess municipal services in the Millbrook Urban Area to determine water and wastewater infrastructure needs as well as develop immediate and long-term strategies to meet those needs.

The Township initiated the MSS and first issued the Notice of Study Commencement on November 2, 2020.

Due to unexpected changes to provincial growth policies, the MSS schedule was extended to accommodate timing for preparation of a Growth Management Strategy (GMS), as mandated by the Province. The MSS incorporates planning projections that were established through the GMS. For clarity, we note that the GMS was completed on August 29, 2022 and is an independent study from this MSS.

As noted above, the MSS focuses on water and wastewater servicing in the Millbrook Urban Area and identifies that the Township would require additional water supply and wastewater treatment capacity by approximately 2029 as well as additional water storage capacity by approximately 2027. These timelines are dependant on the actual rate of growth in Millbrook.

A Stage 1 Archaeological Assessment (AA) report was completed to inform development of alternative solutions for growth-related water and wastewater servicing needs. A copy of the draft

Stage 1 AA report is included for your reference and review; it has not yet been filed with the Ministry of Citizenship and Multiculturalism (MCM).

Project Status

A Public Information Centre (PIC) was held at the Township of Cavan Monaghan Municipal Office on June 21, 2023. The PIC presented the alternatives for water servicing, water storage and wastewater treatment along with associated evaluation summaries and recommendations for future projects and additional studies. This included recommendations for future Schedule B and C Class EA studies for water servicing, water storage and wastewater treatment. The PIC slides can be viewed here: https://www.cavanmonaghan.net/en/live-here/resources/Master-Servicing-Study-PIC-Materials-June-23.pdf

Recently, on November 20, 2023, the draft MSS outcomes and recommendations were presented to Township of Cavan Monaghan Council. The Council presentation built upon information shared previously through the PIC materials, with the addition of wastewater conveyance project requirements in Millbrook. A copy of the council presentation is enclosed for your reference and includes the full list of MSS recommendations.

We have shared the draft MSS report with the Ministry of Environment, Conservation and Parks (MECP) for review and comments, prior to finalization. We anticipate publishing the final MSS report and the Notice of Study Completion in early winter 2024.

Closing

We appreciate your participation and input for this MSS and welcome any comments or questions regarding this study. We would be happy to accommodate a meeting or phone call to discuss this further, at your convenience.

Yours very truly,

R.V. Anderson Associates Limited
Dania Chehab, P.Eng., M.Eng., ENV SP
2001 Sheppard Avenue East, Suite 300
Toronto, ON M2J 4Z8
Tel: (416) 497-8600 ext. 1456
DChehab@rvanderson.com

Township of Cavan Monaghan
Wayne Hancock, P.Eng.
988 County Road 10
Millbrook, ON L0A 1G0
Tel: (705) 932-9327
Fax: (705) 932-3458
WHancock@cavanmonaghan.net

Nikash Persaud

From: Dania Chehab
Sent: December 21, 2023 4:10 PM
To: delaneyj@curvelake.ca; k.a.sandy-mckenzie@rogers.com; JULIEK@CURVELAKE.CA; KAITLINH@CURVELAKE.CA
Cc: Wayne Hancock; Rika Law; Nikash Persaud
Subject: 205371 - Cavan Monaghan Master Servicing Study - Project Update & Stage 1 AA - Curve Lake First Nation
Attachments: 205371-20231221 - Cavan Monaghan MSS Project Update - Curve Lake First Nation.pdf

Categories: Filed by Newforma

Good afternoon,

Please find enclosed information and project update for the Township of Cavan Monaghan Master Servicing Study (MSS). This study focuses on water and wastewater servicing of the Millbrook Urban Area to the planning horizon of 2051, in line with the Township's Growth Management Strategy (GMS).

The information package also includes a copy of the Draft Stage 1 Archaeological Assessment Report prepared by Archaeological Services Inc. (ASI).

We appreciate your input and look forward to hearing from you.
We are also happy to arrange a meeting or call to discuss, at your convenience.

Warmest regards,
Dania

Dania Chehab, P.Eng., M.Eng., ENV SP (she/her)

Project Manager, Water & Wastewater

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300, Toronto ON M2J 4Z8
t 416 497 8600 ext. 1456 |
LinkedIn | Facebook | Website

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300
Toronto ON M2J 4Z8 Canada
T 416 497 8600 **F** 855 833 4022
rvanderson.com

RVA 205371

Thursday, December 21, 2023

Curve Lake First Nation
22 Winookeeda Road
Curve Lake, ON
K0L 1R0

Re: Project Information & Update
Township of Cavan Monaghan Water/Wastewater Master Servicing Study

We are writing to provide you with an update on the Township of Cavan Monaghan Master Servicing Study (MSS) Class Environmental Assessment (EA) project. The MSS is being completed as a high-level study (Approach #1) under the master planning framework of the Municipal Class EA Process and will include the following phases of the Process:

- Completion of Phase 1: Definition of Problem or Opportunity
- Portion of Phase 2: Identification and Evaluation of Alternatives

Under an Approach #1 MSS, additional Municipal Class EAs will need to be completed in the future, outside of this MSS, for works identified as Schedule B and C Projects.

Background

The purpose of this study is to review and assess municipal services in the Millbrook Urban Area to determine water and wastewater infrastructure needs as well as develop immediate and long-term strategies to meet those needs.

The Township initiated the MSS and first issued the Notice of Study Commencement on November 2, 2020.

Due to unexpected changes to provincial growth policies, the MSS schedule was extended to accommodate timing for preparation of a Growth Management Strategy (GMS), as mandated by the Province. The MSS incorporates planning projections that were established through the GMS. For clarity, we note that the GMS was completed on August 29, 2022 and is an independent study from this MSS.

As noted above, the MSS focuses on water and wastewater servicing in the Millbrook Urban Area and identifies that the Township would require additional water supply and wastewater treatment capacity by approximately 2029 as well as additional water storage capacity by approximately 2027. These timelines are dependant on the actual rate of growth in Millbrook.

A Stage 1 Archaeological Assessment (AA) report was completed to inform development of alternative solutions for growth-related water and wastewater servicing needs. A copy of the draft

Stage 1 AA report is included for your reference and review; it has not yet been filed with the Ministry of Citizenship and Multiculturalism (MCM).

Project Status

A Public Information Centre (PIC) was held at the Township of Cavan Monaghan Municipal Office on June 21, 2023. The PIC presented the alternatives for water servicing, water storage and wastewater treatment along with associated evaluation summaries and recommendations for future projects and additional studies. This included recommendations for future Schedule B and C Class EA studies for water servicing, water storage and wastewater treatment. The PIC slides can be viewed here: https://www.cavanmonaghan.net/en/live-here/resources/Master-Servicing-Study-PIC-Materials-June-23.pdf

Recently, on November 20, 2023, the draft MSS outcomes and recommendations were presented to Township of Cavan Monaghan Council. The Council presentation built upon information shared previously through the PIC materials, with the addition of wastewater conveyance project requirements in Millbrook. A copy of the council presentation is enclosed for your reference and includes the full list of MSS recommendations.

We have shared the draft MSS report with the Ministry of Environment, Conservation and Parks (MECP) for review and comments, prior to finalization. We anticipate publishing the final MSS report and the Notice of Study Completion in early winter 2024.

Closing

We appreciate your participation and input for this MSS and welcome any comments or questions regarding this study. We would be happy to accommodate a meeting or phone call to discuss this further, at your convenience.

Yours very truly,

R.V. Anderson Associates Limited
Dania Chehab, P.Eng., M.Eng., ENV SP
2001 Sheppard Avenue East, Suite 300
Toronto, ON M2J 4Z8
Tel: (416) 497-8600 ext. 1456
DChehab@rvanderson.com

Township of Cavan Monaghan
Wayne Hancock, P.Eng.
988 County Road 10
Millbrook, ON L0A 1G0
Tel: (705) 932-9327
Fax: (705) 932-3458
WHancock@cavanmonaghan.net

Nikash Persaud

From: Dania Chehab
Sent: December 21, 2023 5:35 PM
To: chiefcarr@hiawathafn.ca; jsloucks@bell.net; info@hiawathafn.ca; dpaudash@hiawathafn.ca; tcowie@hiawathafn.ca; sdavison@hiawathafn.ca; inquiries@williamstreatiesfirstnations.ca
Cc: Wayne Hancock; Rika Law; Nikash Persaud
Subject: 205371 - Cavan Monaghan Master Servicing Study - Project Update & Stage 1 AA - Hiawatha First Nation
Attachments: 205371-20231221 - Cavan Monaghan MSS Project Update - Hiawatha First Nation.pdf

Categories: Filed by Newforma

Good afternoon Chief Carr, Councillor Sloucks, Mr. Cowie, Mr. Davison, and Ms. Paudash,

Please find enclosed information and project update for the Township of Cavan Monaghan Master Servicing Study (MSS). This study focuses on water and wastewater servicing of the Millbrook Urban Area to the planning horizon of 2051, in line with the Township's Growth Management Strategy (GMS).

The information package also includes a copy of the Draft Stage 1 Archaeological Assessment Report prepared by Archaeological Services Inc. (ASI).

We appreciate your input and look forward to hearing from you.
We are also happy to arrange a meeting or call to discuss, at your convenience.

Warmest regards,
Dania

Dania Chehab, P.Eng., M.Eng., ENV SP (she/her)

Project Manager, Water & Wastewater

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300, Toronto ON M2J 4Z8
t 416 497 8600 ext. 1456 |
LinkedIn | Facebook | Website

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300
Toronto ON M2J 4Z8 Canada
T 416 497 8600 **F** 855 833 4022
rvanderson.com

RVA 205371

Thursday, December 21, 2023

Hiawatha First Nation
123 Paudash Street
Hiawatha, ON
K9J 0E6

Re: Project Information & Update
Township of Cavan Monaghan Water/Wastewater Master Servicing Study

We are writing to provide you with an update on the Township of Cavan Monaghan Master Servicing Study (MSS) Class Environmental Assessment (EA) project. The MSS is being completed as a high-level study (Approach #1) under the master planning framework of the Municipal Class EA Process and will include the following phases of the Process:

- Completion of Phase 1: Definition of Problem or Opportunity
- Portion of Phase 2: Identification and Evaluation of Alternative Solutions

Under an Approach #1 MSS, additional Municipal Class EAs will need to be completed in the future, outside of this MSS, for works identified as Schedule B and C Projects.

Background

The purpose of this study is to review and assess municipal services in the Millbrook Urban Area to determine water and wastewater infrastructure needs as well as develop immediate and long-term strategies to meet those needs.

The Township initiated the MSS and first issued the Notice of Study Commencement on November 2, 2020.

Due to unexpected changes to provincial growth policies, the MSS schedule was extended to accommodate timing for preparation of a Growth Management Strategy (GMS), as mandated by the Province. The MSS incorporates planning projections that were established through the GMS. For clarity, we note that the GMS was completed on August 29, 2022 and is an independent study from this MSS.

As noted above, the MSS focuses on water and wastewater servicing in the Millbrook Urban Area and identifies that the Township would require additional water supply and wastewater treatment capacity by approximately 2029 as well as additional water storage capacity by approximately 2027. These timelines are dependant on the actual rate of growth in Millbrook.

A Stage 1 Archaeological Assessment (AA) report was completed to inform development of alternative solutions for growth-related water and wastewater servicing needs. A copy of the draft

Stage 1 AA report is included for your reference and review; it has not yet been filed with the Ministry of Citizenship and Multiculturalism (MCM).

Project Status

A Public Information Centre (PIC) was held at the Township of Cavan Monaghan Municipal Office on June 21, 2023. The PIC presented the alternatives for water servicing, water storage and wastewater treatment along with associated evaluation summaries and recommendations for future projects and additional studies. This included recommendations for future Schedule B and C Class EA studies for water servicing, water storage and wastewater treatment. The PIC slides can be viewed here: https://www.cavanmonaghan.net/en/live-here/resources/Master-Servicing-Study-PIC-Materials-June-23.pdf

Recently, on November 20, 2023, the draft MSS outcomes and recommendations were presented to Township of Cavan Monaghan Council. The Council presentation built upon information shared previously through the PIC materials, with the addition of wastewater conveyance project requirements in Millbrook. A copy of the council presentation is enclosed for your reference and includes the full list of MSS recommendations.

We have shared the draft MSS report with the Ministry of Environment, Conservation and Parks (MECP) for review and comments, prior to finalization. We anticipate publishing the final MSS report and the Notice of Study Completion in early winter 2024.

Closing

We appreciate your participation and input for this MSS and welcome any comments or questions regarding this study. We would be happy to accommodate a meeting or phone call to discuss this further, at your convenience.

Yours very truly,

R.V. Anderson Associates Limited
Dania Chehab, P.Eng., M.Eng., ENV SP
2001 Sheppard Avenue East, Suite 300
Toronto, ON M2J 4Z8
Tel: (416) 497-8600 ext. 1456
DChehab@rvanderson.com

Township of Cavan Monaghan
Wayne Hancock, P.Eng.
988 County Road 10
Millbrook, ON L0A 1G0
Tel: (705) 932-9327
Fax: (705) 932-3458
WHancock@cavanmonaghan.net

Nikash Persaud

From: Dania Chehab
Sent: December 21, 2023 5:01 PM
To: info@spiritofthestone.ca
Cc: Wayne Hancock; Rika Law; Nikash Persaud
Subject: 205371 - Cavan Monaghan Master Servicing Study - Project Update & Stage 1 AA - Kawartha Nishnawbe First Nation
Attachments: 205371-20231221 - Cavan Monaghan MSS Project Update - Kawartha Nishnawbe First Nation.pdf

Categories: Filed by Newforma

Good afternoon Chief Nahrgang,

Please find enclosed information and project update for the Township of Cavan Monaghan Master Servicing Study (MSS). This study focuses on water and wastewater servicing of the Millbrook Urban Area to the planning horizon of 2051, in line with the Township's Growth Management Strategy (GMS).

The information package also includes a copy of the Draft Stage 1 Archaeological Assessment Report prepared by Archaeological Services Inc. (ASI).

We appreciate your input and look forward to hearing from you.
We are also happy to arrange a meeting or call to discuss, at your convenience.

Warmest regards,
Dania

Dania Chehab, P.Eng., M.Eng., ENV SP (she/her)

Project Manager, Water & Wastewater

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300, Toronto ON M2J 4Z8
t 416 497 8600 ext. 1456 |
LinkedIn | Facebook | Website

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300
Toronto ON M2J 4Z8 Canada
T 416 497 8600 **F** 855 833 4022
rvanderson.com

RVA 205371

Thursday, December 21, 2023

Kawartha Nishnawbe First Nation
257 Big Cedar Lake Road
Big Cedar, ON
K0L 2H0

Re: Project Information & Update
Township of Cavan Monaghan Water/Wastewater Master Servicing Study

We are writing to provide you with an update on the Township of Cavan Monaghan Master Servicing Study (MSS) Class Environmental Assessment (EA) project. The MSS is being completed as a high-level study (Approach #1) under the master planning framework of the Municipal Class EA Process and will include the following phases of the Process:

- Completion of Phase 1: Definition of Problem or Opportunity
- Portion of Phase 2: Identification and Evaluation of Alternative Solutions

Under an Approach #1 MSS, additional Municipal Class EAs will need to be completed in the future, outside of this MSS, for works identified as Schedule B and C Projects.

Background

The purpose of this study is to review and assess municipal services in the Millbrook Urban Area to determine water and wastewater infrastructure needs as well as develop immediate and long-term strategies to meet those needs.

The Township initiated the MSS and first issued the Notice of Study Commencement on November 2, 2020.

Due to unexpected changes to provincial growth policies, the MSS schedule was extended to accommodate timing for preparation of a Growth Management Strategy (GMS), as mandated by the Province. The MSS incorporates planning projections that were established through the GMS. For clarity, we note that the GMS was completed on August 29, 2022 and is an independent study from this MSS.

As noted above, the MSS focuses on water and wastewater servicing in the Millbrook Urban Area and identifies that the Township would require additional water supply and wastewater treatment capacity by approximately 2029 as well as additional water storage capacity by approximately 2027. These timelines are dependant on the actual rate of growth in Millbrook.

A Stage 1 Archaeological Assessment (AA) report was completed to inform development of alternative solutions for growth-related water and wastewater servicing needs. A copy of the draft

Stage 1 AA report is included for your reference and review; it has not yet been filed with the Ministry of Citizenship and Multiculturalism (MCM).

Project Status

A Public Information Centre (PIC) was held at the Township of Cavan Monaghan Municipal Office on June 21, 2023. The PIC presented the alternatives for water servicing, water storage and wastewater treatment along with associated evaluation summaries and recommendations for future projects and additional studies. This included recommendations for future Schedule B and C Class EA studies for water servicing, water storage and wastewater treatment. The PIC slides can be viewed here: https://www.cavanmonaghan.net/en/live-here/resources/Master-Servicing-Study-PIC-Materials-June-23.pdf

Recently, on November 20, 2023, the draft MSS outcomes and recommendations were presented to Township of Cavan Monaghan Council. The Council presentation built upon information shared previously through the PIC materials, with the addition of wastewater conveyance project requirements in Millbrook. A copy of the council presentation is enclosed for your reference and includes the full list of MSS recommendations.

We have shared the draft MSS report with the Ministry of Environment, Conservation and Parks (MECP) for review and comments, prior to finalization. We anticipate publishing the final MSS report and the Notice of Study Completion in early winter 2024.

Closing

We appreciate your participation and input for this MSS and welcome any comments or questions regarding this study. We would be happy to accommodate a meeting or phone call to discuss this further, at your convenience.

Yours very truly,

R.V. Anderson Associates Limited
Dania Chehab, P.Eng., M.Eng., ENV SP
2001 Sheppard Avenue East, Suite 300
Toronto, ON M2J 4Z8
Tel: (416) 497-8600 ext. 1456
DChehab@rvanderson.com

Township of Cavan Monaghan
Wayne Hancock, P.Eng.
988 County Road 10
Millbrook, ON L0A 1G0
Tel: (705) 932-9327
Fax: (705) 932-3458
WHancock@cavanmonaghan.net

Nikash Persaud

From: Dania Chehab
Sent: December 21, 2023 5:39 PM
To: info@scugogfirstnation.com; inquiries@williamstreatiesfirstnations.ca; worksinfo@scugogfirstnation.com; consultation@scugogfirstnation.com
Cc: Wayne Hancock; Rika Law; Nikash Persaud
Subject: 205371 - Cavan Monaghan Master Servicing Study - Project Update & Stage 1 AA - Mississaugas of Scugog Island First Nation
Attachments: 205371-20231221 - Cavan Monaghan MSS Project Update - Mississaugas of Scugog Island First Nation.pdf

Categories: Filed by Newforma

Good afternoon,

Please find enclosed information and project update for the Township of Cavan Monaghan Master Servicing Study (MSS). This study focuses on water and wastewater servicing of the Millbrook Urban Area to the planning horizon of 2051, in line with the Township's Growth Management Strategy (GMS).

The information package also includes a copy of the Draft Stage 1 Archaeological Assessment Report prepared by Archaeological Services Inc. (ASI).

We appreciate your input and look forward to hearing from you.
We are also happy to arrange a meeting or call to discuss, at your convenience.

Warmest regards,
Dania

Dania Chehab, P.Eng., M.Eng., ENV SP (she/her)

Project Manager, Water & Wastewater

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300, Toronto ON M2J 4Z8
t 416 497 8600 ext. 1456 |
LinkedIn | Facebook | Website

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300
Toronto ON M2J 4Z8 Canada
T 416 497 8600 **F** 855 833 4022
rvanderson.com

RVA 205371

Thursday, December 21, 2023

Mississaugas of Scugog Island First Nation
Administration Building; 22521 Island Road
Port Perry, ON
L9L 1B6

Re: Project Information & Update
Township of Cavan Monaghan Water/Wastewater Master Servicing Study

We are writing to provide you with an update on the Township of Cavan Monaghan Master Servicing Study (MSS) Class Environmental Assessment (EA) project. The MSS is being completed as a high-level study (Approach #1) under the master planning framework of the Municipal Class EA Process and will include the following phases of the Process:

- Completion of Phase 1: Definition of Problem or Opportunity
- Portion of Phase 2: Identification and Evaluation of Alternative Solutions

Under an Approach #1 MSS, additional Municipal Class EAs will need to be completed in the future, outside of this MSS, for works identified as Schedule B and C Projects.

Background

The purpose of this study is to review and assess municipal services in the Millbrook Urban Area to determine water and wastewater infrastructure needs as well as develop immediate and long-term strategies to meet those needs.

The Township initiated the MSS and first issued the Notice of Study Commencement on November 2, 2020.

Due to unexpected changes to provincial growth policies, the MSS schedule was extended to accommodate timing for preparation of a Growth Management Strategy (GMS), as mandated by the Province. The MSS incorporates planning projections that were established through the GMS. For clarity, we note that the GMS was completed on August 29, 2022 and is an independent study from this MSS.

As noted above, the MSS focuses on water and wastewater servicing in the Millbrook Urban Area and identifies that the Township would require additional water supply and wastewater treatment capacity by approximately 2029 as well as additional water storage capacity by approximately 2027. These timelines are dependant on the actual rate of growth in Millbrook.

A Stage 1 Archaeological Assessment (AA) report was completed to inform development of alternative solutions for growth-related water and wastewater servicing needs. A copy of the draft

Stage 1 AA report is included for your reference and review; it has not yet been filed with the Ministry of Citizenship and Multiculturalism (MCM).

Project Status

A Public Information Centre (PIC) was held at the Township of Cavan Monaghan Municipal Office on June 21, 2023. The PIC presented the alternatives for water servicing, water storage and wastewater treatment along with associated evaluation summaries and recommendations for future projects and additional studies. This included recommendations for future Schedule B and C Class EA studies for water servicing, water storage and wastewater treatment. The PIC slides can be viewed here: https://www.cavanmonaghan.net/en/live-here/resources/Master-Servicing-Study-PIC-Materials-June-23.pdf

Recently, on November 20, 2023, the draft MSS outcomes and recommendations were presented to Township of Cavan Monaghan Council. The Council presentation built upon information shared previously through the PIC materials, with the addition of wastewater conveyance project requirements in Millbrook. A copy of the council presentation is enclosed for your reference and includes the full list of MSS recommendations.

We have shared the draft MSS report with the Ministry of Environment, Conservation and Parks (MECP) for review and comments, prior to finalization. We anticipate publishing the final MSS report and the Notice of Study Completion in early winter 2024.

Closing

We appreciate your participation and input for this MSS and welcome any comments or questions regarding this study. We would be happy to accommodate a meeting or phone call to discuss this further, at your convenience.

Yours very truly,

R.V. Anderson Associates Limited
Dania Chehab, P.Eng., M.Eng., ENV SP
2001 Sheppard Avenue East, Suite 300
Toronto, ON M2J 4Z8
Tel: (416) 497-8600 ext. 1456
DChehab@rvanderson.com

Township of Cavan Monaghan
Wayne Hancock, P.Eng.
988 County Road 10
Millbrook, ON L0A 1G0
Tel: (705) 932-9327
Fax: (705) 932-3458
WHancock@cavanmonaghan.net

Nikash Persaud

From: Tom Cowie <tcowie@hiawathafn.ca>
Sent: December 22, 2023 9:39 AM
To: Dania Chehab; Chief Laurie Carr; Councillor Jeff Loucks; Info; Donna Paudash; Sean Davison; inquiries@williamstreatiesfirstnations.ca
Cc: Wayne Hancock; Rika Law; Nikash Persaud
Subject: RE: 205371 - Cavan Monaghan Master Servicing Study - Project Update & Stage 1 AA - Hiawatha First Nation

Categories: Filed by Newforma

[CAUTION EXTERNAL EMAIL] Make Sure that it is legitimate **before** Replying or Clicking on any links

Aaniin Dania,

Chi miigwech for the information on the MSS project update. At this moment we have no questions or concerns. After reviewing it completely we may have questions and concerns in which we will contact your office to further discuss in the new year. Have a great weekend.

Gichi manaadendamowin

Tom Cowie
Tom Cowie
Lands/Resources Consultation
Hiawatha First Nation
431 Hiawatha Line,
Hiawatha, On
K9J 0E6
705 295-4421 Ext. 216
Email tcowie@hiawathafn.ca

We, the Michi Saagiig of Hiawatha First Nation, are a vibrant, proud, independent and healthy people balanced in the richness of our culture and traditional way of life

---

From: Dania Chehab <dchehab@rvanderson.com>
Sent: Thursday, December 21, 2023 5:35 PM
To: Chief Laurie Carr <chiefcarr@hiawathafn.ca>; Councillor Jeff Loucks <jsloucks@bell.net>; Info <Info@HiawathaFN.ca>; Donna Paudash <dpaudash@HiawathaFN.ca>; Tom Cowie <tcowie@hiawathafn.ca>; Sean Davison <sdavison@hiawathafn.ca>; inquiries@williamstreatiesfirstnations.ca
Cc: Wayne Hancock <whancock@cavanmonaghan.net>; Rika Law <rlaw@rvanderson.com>; Nikash Persaud <npersaud@rvanderson.com>
Subject: 205371 - Cavan Monaghan Master Servicing Study - Project Update & Stage 1 AA - Hiawatha First Nation

ALERT: This message originated outside of HFN's network. **BE CAUTIOUS** before clicking any link or attachment.

Good afternoon Chief Carr, Councillor Sloucks, Mr. Cowie, Mr. Davison, and Ms. Paudash,

Please find enclosed information and project update for the Township of Cavan Monaghan Master Servicing Study (MSS). This study focuses on water and wastewater servicing of the Millbrook Urban Area to the planning horizon of 2051, in line with the Township's Growth Management Strategy (GMS).

The information package also includes a copy of the Draft Stage 1 Archaeological Assessment Report prepared by Archaeological Services Inc. (ASI).

We appreciate your input and look forward to hearing from you.
We are also happy to arrange a meeting or call to discuss, at your convenience.

Warmest regards,
Dania

Dania Chehab, P.Eng., M.Eng., ENV SP (she/her)

Project Manager, Water & Wastewater

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300, Toronto ON M2J 4Z8
t 416 497 8600 ext. 1456 |
LinkedIn | Facebook | Website

R.V. Anderson Associates Limited has been engaged in the provision of professional engineering, operations, and management services since 1948. This message is intended only for the use of the individual(s) to whom it is addressed. If you are not the intended recipient(s), disclosure, copying, distribution and use are prohibited; please notify us immediately and delete this email from your systems. Please see http://www.rvanderson.com for Copyright and Terms of Use.

Nikash Persaud

From: Dania Chehab
Sent: January 23, 2024 2:16 PM
To: tsimpson@alderville.ca; thundercloudkwe@alderville.ca; dawn.marie@alderville.ca; nsawyer@alderville.ca; jmarsden@alderville.ca; afnreception@alderville.ca; cwilson@alderville.ca; jsmoke@alderville.ca
Cc: inquiries@williamstreatiesfirstnations.ca; Wayne Hancock; Rika Law; Nikash Persaud
Subject: RE: 205371 - Cavan Monaghan Master Servicing Study - Project Update & Stage 1 AA - Alderville First Nation
Attachments: 205371-20231221 - Cavan Monaghan MSS Project Update - Alderville First Nation.pdf

Categories: Filed by Newforma

Good afternoon Chief and Councillors,

I hope you enjoyed a restful winter break.

I am writing to follow up on our previous email and welcome any comments or input you may have on behalf of Alderville First Nation.

I have also enclosed a copy of the materials from our previous email for quick reference (one pdf with background letter, project summary, and Stage 1 Archaeological Assessment).

All the best,

Dania

Dania Chehab, P.Eng., M.Eng., ENV SP (she/her)
Project Manager, Water & Wastewater

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300, Toronto ON M2J 4Z8
t 416 497 8600 ext. 1456 |
LinkedIn | Facebook | Website

From: Dania Chehab
Sent: Thursday, December 21, 2023 3:29 PM
To: tsimpson@alderville.ca; thundercloudkwe@alderville.ca; dawn.marie@alderville.ca; nsawyer@alderville.ca; jmarsden@alderville.ca; afnreception@alderville.ca; cwilson@alderville.ca; jsmoke@alderville.ca
Cc: inquiries@williamstreatiesfirstnations.ca; Wayne Hancock <whancock@cavanmonaghan.net>; Rika Law <rlaw@rvanderson.com>; Nikash Persaud <npersaud@rvanderson.com>
Subject: 205371 - Cavan Monaghan Master Servicing Study - Project Update & Stage 1 AA - Alderville First Nation

Good afternoon Chief and Councillors,

Please find enclosed information and project update for the Township of Cavan Monaghan Master Servicing Study (MSS). This study focuses on water and wastewater servicing of the Millbrook Urban Area to the planning horizon of 2051, in line with the Township's Growth Management Strategy (GMS).

The information package also includes a copy of the Draft Stage 1 Archaeological Assessment Report prepared by Archaeological Services Inc. (ASI).

We appreciate your input and look forward to hearing from you.
We are also happy to arrange a meeting or call to discuss, at your convenience.

Warmest regards,
Dania

Dania Chehab, P.Eng., M.Eng., ENV SP (she/her)

Project Manager, Water & Wastewater

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300, Toronto ON M2J 4Z8
t 416 497 8600 ext. 1456 |
LinkedIn | Facebook | Website

Nikash Persaud

From: Dania Chehab
Sent: January 23, 2024 2:24 PM
To: delaneyj@curvelake.ca; k.a.sandy-mckenzie@rogers.com; JULIEK@CURVELAKE.CA; KAITLINH@CURVELAKE.CA
Cc: Wayne Hancock; Rika Law; Nikash Persaud
Subject: RE: 205371 - Cavan Monaghan Master Servicing Study - Project Update & Stage 1 AA - Curve Lake First Nation
Attachments: 205371-20231221 - Cavan Monaghan MSS Project Update - Curve Lake First Nation.pdf

Categories: Filed by Newforma

Good afternoon,

I am writing to follow up on our previous email and welcome any comments or input you may have on behalf of Curve Lake First Nation.

I have also enclosed a copy of the materials from our previous email for quick reference (one pdf with background letter, project summary, and Stage 1 Archaeological Assessment).

All the best,

Dania

Dania Chehab, P.Eng., M.Eng., ENV SP (she/her)
Project Manager, Water & Wastewater

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300, Toronto ON M2J 4Z8
t 416 497 8600 ext. 1456 |
LinkedIn | Facebook | Website

From: Dania Chehab
Sent: Thursday, December 21, 2023 4:10 PM
To: delaneyj@curvelake.ca; k.a.sandy-mckenzie@rogers.com; JULIEK@CURVELAKE.CA; KAITLINH@CURVELAKE.CA
Cc: Wayne Hancock <whancock@cavanmonaghan.net>; Rika Law <rlaw@rvanderson.com>; Nikash Persaud <npersaud@rvanderson.com>
Subject: 205371 - Cavan Monaghan Master Servicing Study - Project Update & Stage 1 AA - Curve Lake First Nation

Good afternoon,

Please find enclosed information and project update for the Township of Cavan Monaghan Master Servicing Study (MSS). This study focuses on water and wastewater servicing of the Millbrook Urban Area to the planning horizon of 2051, in line with the Township's Growth Management Strategy (GMS).

The information package also includes a copy of the Draft Stage 1 Archaeological Assessment Report prepared by Archaeological Services Inc. (ASI).

We appreciate your input and look forward to hearing from you.
We are also happy to arrange a meeting or call to discuss, at your convenience.

Warmest regards,
Dania

Dania Chehab, P.Eng., M.Eng., ENV SP (she/her)

Project Manager, Water & Wastewater

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300, Toronto ON M2J 4Z8
t 416 497 8600 ext. 1456 |
LinkedIn | Facebook | Website

Nikash Persaud

From: Dania Chehab
Sent: January 23, 2024 2:40 PM
To: Tom Cowie
Cc: Wayne Hancock; Rika Law; Nikash Persaud; Chief Laurie Carr; Donna Paudash; Councillor Jeff Loucks; Sean Davison; Info; inquiries@williamstreatiesfirstnations.ca
Subject: RE: 205371 - Cavan Monaghan Master Servicing Study - Project Update & Stage 1 AA - Hiawatha First Nation
Attachments: 205371-20231221 - Cavan Monaghan MSS Project Update - Hiawatha First Nation.pdf

Categories: Filed by Newforma

Good afternoon Tom,

I hope you enjoyed some time off earlier this winter.

I am following up to see if you have any questions or concerns with the information we shared previously.

I have also enclosed a copy of the materials from our previous email for quick reference (one pdf with background letter, project summary, and Stage 1 Archaeological Assessment).

All the best,

Dania

Dania Chehab, P.Eng., M.Eng., ENV SP (she/her)
Project Manager, Water & Wastewater

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300, Toronto ON M2J 4Z8
t 416 497 8600 ext. 1456 |
LinkedIn | Facebook | Website

From: Dania Chehab
Sent: Friday, December 22, 2023 12:05 PM
To: Tom Cowie <tcowie@hiawathafn.ca>; Chief Laurie Carr <chiefcarr@hiawathafn.ca>; Councillor Jeff Loucks <jsloucks@bell.net>; Info <Info@HiawathaFN.ca>; Donna Paudash <dpaudash@HiawathaFN.ca>; Sean Davison <sdavison@hiawathafn.ca>; inquiries@williamstreatiesfirstnations.ca
Cc: Wayne Hancock <whancock@cavanmonaghan.net>; Rika Law <rlaw@rvanderson.com>; Nikash Persaud <npersaud@rvanderson.com>
Subject: RE: 205371 - Cavan Monaghan Master Servicing Study - Project Update & Stage 1 AA - Hiawatha First Nation

Thanks very much, Tom. We'll check back in with you in the new year.

Best wishes for the holiday season.

From: Tom Cowie <tcowie@hiawathafn.ca>
Sent: Friday, December 22, 2023 9:39 AM
To: Dania Chehab <dchehab@rvanderson.com>; Chief Laurie Carr <chiefcarr@hiawathafn.ca>; Councillor Jeff Loucks <jsloucks@bell.net>; Info <Info@HiawathaFN.ca>; Donna Paudash <dpaudash@HiawathaFN.ca>; Sean Davison <sdavison@hiawathafn.ca>; inquiries@williamstreatiesfirstnations.ca
Cc: Wayne Hancock <whancock@cavanmonaghan.net>; Rika Law <rlaw@rvanderson.com>; Nikash Persaud <npersaud@rvanderson.com>
Subject: RE: 205371 - Cavan Monaghan Master Servicing Study - Project Update & Stage 1 AA - Hiawatha First Nation

Aaniin Dania,

Chi miigwech for the information on the MSS project update. At this moment we have no questions or concerns. After reviewing it completely we may have questions and concerns in which we will contact your office to further discuss in the new year. Have a great weekend.

Gichi manaadendamowin

Tom Cowie
Tom Cowie
Lands/Resources Consultation
Hiawatha First Nation
431 Hiawatha Line,
Hiawatha, On
K9J 0E6
705 295-4421 Ext. 216
Email tcowie@hiawathafn.ca

We, the Michi Saagiig of Hiawatha First Nation, are a vibrant, proud, independent and healthy people balanced in the richness of our culture and traditional way of life

---

From: Dania Chehab <dchehab@rvanderson.com>
Sent: Thursday, December 21, 2023 5:35 PM
To: Chief Laurie Carr <chiefcarr@hiawathafn.ca>; Councillor Jeff Loucks <jsloucks@bell.net>; Info <Info@HiawathaFN.ca>; Donna Paudash <dpaudash@HiawathaFN.ca>; Tom Cowie <tcowie@hiawathafn.ca>; Sean Davison <sdavison@hiawathafn.ca>; inquiries@williamstreatiesfirstnations.ca
Cc: Wayne Hancock <whancock@cavanmonaghan.net>; Rika Law <rlaw@rvanderson.com>; Nikash Persaud <npersaud@rvanderson.com>
Subject: 205371 - Cavan Monaghan Master Servicing Study - Project Update & Stage 1 AA - Hiawatha First Nation

ALERT: This message originated outside of HFN's network. **BE CAUTIOUS** before clicking any link or attachment.

Good afternoon Chief Carr, Councillor Sloucks, Mr. Cowie, Mr. Davison, and Ms. Paudash,

Please find enclosed information and project update for the Township of Cavan Monaghan Master Servicing Study (MSS). This study focuses on water and wastewater servicing of the Millbrook Urban Area to the planning horizon of 2051, in line with the Township's Growth Management Strategy (GMS).

The information package also includes a copy of the Draft Stage 1 Archaeological Assessment Report prepared by Archaeological Services Inc. (ASI).

We appreciate your input and look forward to hearing from you.
We are also happy to arrange a meeting or call to discuss, at your convenience.

Warmest regards,
Dania

Dania Chehab, P.Eng., M.Eng., ENV SP (she/her)

Project Manager, Water & Wastewater

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300, Toronto ON M2J 4Z8
t 416 497 8600 ext. 1456 |
LinkedIn | Facebook | Website

R.V. Anderson Associates Limited has been engaged in the provision of professional engineering, operations, and management services since 1948. This message is intended only for the use of the individual(s) to whom it is addressed. If you are not the intended recipient(s), disclosure, copying, distribution and use are prohibited; please notify us immediately and delete this email from your systems. Please see http://www.rvanderson.com for Copyright and Terms of Use.

Nikash Persaud

From: Dania Chehab
Sent: January 23, 2024 2:35 PM
To: info@spiritofthestone.ca
Cc: Wayne Hancock; Rika Law; Nikash Persaud
Subject: RE: 205371 - Cavan Monaghan Master Servicing Study - Project Update & Stage 1 AA - Kawartha Nishnawbe First Nation
Attachments: 205371-20231221 - Cavan Monaghan MSS Project Update - Kawartha Nishnawbe First Nation.pdf

Categories: Filed by Newforma

Good afternoon Chief Nahrgang,

I hope you enjoyed a restful winter break.

I am writing to follow up on our previous email and welcome any comments or input you may have on behalf of Kawartha Nishnawbe First Nation.

I have also enclosed a copy of the materials from our previous email for quick reference (one pdf with background letter, project summary, and Stage 1 Archaeological Assessment).

All the best,

Dania

Dania Chehab, P.Eng., M.Eng., ENV SP (she/her)
Project Manager, Water & Wastewater
R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300, Toronto ON M2J 4Z8
t 416 497 8600 ext. 1456 |
LinkedIn | Facebook | Website

From: Dania Chehab
Sent: Thursday, December 21, 2023 5:01 PM
To: info@spiritofthestone.ca
Cc: Wayne Hancock <whancock@cavanmonaghan.net>; Rika Law <rlaw@rvanderson.com>; Nikash Persaud <npersaud@rvanderson.com>
Subject: 205371 - Cavan Monaghan Master Servicing Study - Project Update & Stage 1 AA - Kawartha Nishnawbe First Nation

Good afternoon Chief Nahrgang,

Please find enclosed information and project update for the Township of Cavan Monaghan Master Servicing Study (MSS). This study focuses on water and wastewater servicing of the Millbrook Urban Area to the planning horizon of 2051, in line with the Township's Growth Management Strategy (GMS).

The information package also includes a copy of the Draft Stage 1 Archaeological Assessment Report prepared by Archaeological Services Inc. (ASI).

We appreciate your input and look forward to hearing from you.
We are also happy to arrange a meeting or call to discuss, at your convenience.

Warmest regards,
Dania

Dania Chehab, P.Eng., M.Eng., ENV SP (she/her)

Project Manager, Water & Wastewater

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300, Toronto ON M2J 4Z8
t 416 497 8600 ext. 1456 |
LinkedIn | Facebook | Website

Nikash Persaud

From: Dania Chehab
Sent: January 23, 2024 2:45 PM
To: consultations@metisnation.org
Cc: Wayne Hancock; Rika Law; Nikash Persaud
Subject: 205371 - Cavan Monaghan Master Servicing Study - Project Update & Stage 1 AA - Metis Nation
Attachments: 205371-20231221 - Cavan Monaghan MSS Project Update - Metis Nation of Ontario.pdf

Categories: Filed by Newforma

Good afternoon,

Please find enclosed information and project update for the Township of Cavan Monaghan Master Servicing Study (MSS). This study focuses on water and wastewater servicing of the Millbrook Urban Area to the planning horizon of 2051 in line with the Township's Growth Management Strategy (GMS).

The information package also includes a copy of the Draft Stage 1 Archaeological Assessment Report prepared by Archaeological Services Inc (. ASI).

We appreciate your input and look forward to hearing from you.

We are also happy to arrange a meeting or call to discuss, at your convenience.

Warmest regards,

Dania

Dania Chehab, P.Eng., M.Eng., ENV SP (she/her)

Project Manager, Water & Wastewater

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300, Toronto ON M2J 4Z8
t 416 497 8600 ext. 1456 |

LinkedIn | Facebook | Website

Nikash Persaud

From: Dania Chehab
Sent: January 23, 2024 2:19 PM
To: info@scugogfirstnation.com; inquiries@williamstreatiesfirstnations.ca; worksinfo@scugogfirstnation.com; consultation@scugogfirstnation.com
Cc: Wayne Hancock; Rika Law; Nikash Persaud
Subject: RE: 205371 - Cavan Monaghan Master Servicing Study - Project Update & Stage 1 AA - Mississaugas of Scugog Island First Nation
Attachments: 205371-20231221 - Cavan Monaghan MSS Project Update - Mississaugas of Scugog Island First Nation.pdf

Categories: Filed by Newforma

Good afternoon,

I am writing to follow up on our previous email and welcome any comments or input you may have on behalf of Mississaugas of Scugog Island First Nation.

I have also enclosed a copy of the materials from our previous email for quick reference (one pdf with background letter, project summary and stage 1 Archaeological Assessment).

All the best,

Dania

Dania Chehab, P.Eng., M.Eng., ENV SP (she/her)
Project Manager, Water & Wastewater
R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300, Toronto ON M2J 4Z8
t 416 497 8600 ext. 1456 |
LinkedIn | Facebook | Website

From: Dania Chehab
Sent: Thursday, December 21, 2023 5:39 PM
To: info@scugogfirstnation.com; inquiries@williamstreatiesfirstnations.ca; worksinfo@scugogfirstnation.com; consultation@scugogfirstnation.com
Cc: Wayne Hancock <whancock@cavanmonaghan.net>; Rika Law <rlaw@rvanderson.com>; Nikash Persaud <npersaud@rvanderson.com>
Subject: 205371 - Cavan Monaghan Master Servicing Study - Project Update & Stage 1 AA - Mississaugas of Scugog Island First Nation

Good afternoon,

Please find enclosed information and project update for the Township of Cavan Monaghan Master Servicing Study (MSS). This study focuses on water and wastewater servicing of the Millbrook Urban Area to the planning horizon of 2051, in line with the Township's Growth Management Strategy (GMS).

The information package also includes a copy of the Draft Stage 1 Archaeological Assessment Report prepared by Archaeological Services Inc. (ASI).

We appreciate your input and look forward to hearing from you.
We are also happy to arrange a meeting or call to discuss, at your convenience.

Warmest regards,
Dania

Dania Chehab, P.Eng., M.Eng., ENV SP (she/her)

Project Manager, Water & Wastewater

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300, Toronto ON M2J 4Z8
t 416 497 8600 ext. 1456 |
LinkedIn | Facebook | Website

Nikash Persaud

From: Tom Cowie <tcowie@hiawathafn.ca>
Sent: January 23, 2024 4:37 PM
To: Dania Chehab
Cc: Wayne Hancock; Rika Law; Nikash Persaud; Chief Laurie Carr; Donna Paudash; Councillor Jeff Loucks; Sean Davison; Info; inquiries@williamstreatiesfirstnations.ca
Subject: RE: 205371 - Cavan Monaghan Master Servicing Study - Project Update & Stage 1 AA - Hiawatha First Nation

Categories: Filed by Newforma

[CAUTION EXTERNAL EMAIL] Make Sure that it is legitimate **before** Replying or Clicking on any links

Aaniin Dania,

Chi miigwech for the information. I have no questions or concerns regarding this project at this moment. If any questions or concerns arise I will not hesitate to contact your office. Have a great week.

Gichi manaadendamowin

Tom Cowie
Tom Cowie
Lands/Resources Consultation
Hiawatha First Nation
431 Hiawatha Line,
Hiawatha, On
K9J 0E6
705 295-4421 Ext. 216
Email tcowie@hiawathafn.ca

We, the Michi Saagiig of Hiawatha First Nation, are a vibrant, proud, independent and healthy people balanced in the richness of our culture and traditional way of life

---

From: Dania Chehab <dchehab@rvanderson.com>
Sent: Tuesday, January 23, 2024 2:40 PM
To: Tom Cowie <tcowie@hiawathafn.ca>
Cc: Wayne Hancock <whancock@cavanmonaghan.net>; Rika Law <rlaw@rvanderson.com>; Nikash Persaud <npersaud@rvanderson.com>; Chief Laurie Carr <chiefcarr@hiawathafn.ca>; Donna Paudash <dpaudash@HiawathaFN.ca>; Councillor Jeff Loucks <jsloucks@bell.net>; Sean Davison <sdavison@hiawathafn.ca>; Info <Info@HiawathaFN.ca>; inquiries@williamstreatiesfirstnations.ca
Subject: RE: 205371 - Cavan Monaghan Master Servicing Study - Project Update & Stage 1 AA - Hiawatha First Nation

ALERT: This message originated outside of HFN's network. **BE CAUTIOUS** before clicking any link or attachment.

Good afternoon Tom,

I hope you enjoyed some time off earlier this winter.

I am following up to see if you have any questions of concerns with the information we shared previously.

I have also enclosed a copy of the materials from our previous email for quick reference (one pdf wiht background letter, project summary, and stage 1 Archaeological Assesment)

All the best,

Dania

Dania Chehab, P.Eng., M.Eng., ENV SP (she/her)
Project Manager, Water & Wastewater
R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300, Toronto ON M2J 4Z8
t 416 497 8600 ext. 1456 |
LinkedIn | Facebook | Website

From: Dania Chehab
Sent: Friday, December 22, 2023 12:05 PM
To: Tom Cowie <tcowie@hiawathafn.ca>; Chief Laurie Carr <chiefcarr@hiawathafn.ca>; Councillor Jeff Loucks <jsloucks@bell.net>; Info <Info@HiawathaFN.ca>; Donna Paudash <dpaudash@HiawathaFN.ca>; Sean Davison <sdavison@hiawathafn.ca>; inquiries@williamstreatiesfirstnations.ca
Cc: Wayne Hancock <whancock@cavanmonaghan.net>; Rika Law <rlaw@rvanderson.com>; Nikash Persaud <npersaud@rvanderson.com>
Subject: RE: 205371 - Cavan Monaghan Master Servicing Study - Project Update & Stage 1 AA - Hiawatha First Nation

Thanks very much, Tom. We'll check back in with you in the new year.
Best wishes for the holiday season.

From: Tom Cowie <tcowie@hiawathafn.ca>
Sent: Friday, December 22, 2023 9:39 AM
To: Dania Chehab <dchehab@rvanderson.com>; Chief Laurie Carr <chiefcarr@hiawathafn.ca>; Councillor Jeff Loucks <jsloucks@bell.net>; Info <Info@HiawathaFN.ca>; Donna Paudash <dpaudash@HiawathaFN.ca>; Sean Davison <sdavison@hiawathafn.ca>; inquiries@williamstreatiesfirstnations.ca
Cc: Wayne Hancock <whancock@cavanmonaghan.net>; Rika Law <rlaw@rvanderson.com>; Nikash Persaud <npersaud@rvanderson.com>
Subject: RE: 205371 - Cavan Monaghan Master Servicing Study - Project Update & Stage 1 AA - Hiawatha First Nation

[CAUTION EXTERNAL EMAIL] Make Sure that it is legitimate **before** Replying or Clicking on any links

Aaniin Dania,

Chi miigwech for the information on the MSS project update. At this moment we have no questions or concerns. After reviewing it completely we may have questions and concerns in which we will contact your office to further discuss in the new year. Have a great weekend.

Gichi manaadendamowin

Tom Cowie
Tom Cowie
Lands/Resources Consultation
Hiawatha First Nation
431 Hiawatha Line,
Hiawatha, On
K9J 0E6
705 295-4421 Ext. 216
Email tcowie@hiawathafn.ca

We, the Michi Saagiig of Hiawatha First Nation, are a vibrant, proud, independent and healthy people balanced in the richness of our culture and traditional way of life

---

From: Dania Chehab <dchehab@rvanderson.com>
Sent: Thursday, December 21, 2023 5:35 PM
To: Chief Laurie Carr <chiefcarr@hiawathafn.ca>; Councillor Jeff Loucks <jsloucks@bell.net>; Info <Info@HiawathaFN.ca>; Donna Paudash <dpaudash@HiawathaFN.ca>; Tom Cowie <tcowie@hiawathafn.ca>; Sean Davison <sdavison@hiawathafn.ca>; inquiries@williamstreatiesfirstnations.ca
Cc: Wayne Hancock <whancock@cavanmonaghan.net>; Rika Law <rlaw@rvanderson.com>; Nikash Persaud <npersaud@rvanderson.com>
Subject: 205371 - Cavan Monaghan Master Servicing Study - Project Update & Stage 1 AA - Hiawatha First Nation

ALERT: This message originated outside of HFN's network. **BE CAUTIOUS** before clicking any link or attachment.

Good afternoon Chief Carr, Councillor Sloucks, Mr. Cowie, Mr. Davison, and Ms. Paudash,

Please find enclosed information and project update for the Township of Cavan Monaghan Master Servicing Study (MSS). This study focuses on water and wastewater servicing of the Millbrook Urban Area to the planning horizon of 2051, in line with the Township's Growth Management Strategy (GMS).

The information package also includes a copy of the Draft Stage 1 Archaeological Assessment Report prepared by Archaeological Services Inc. (ASI).

We appreciate your input and look forward to hearing from you.
We are also happy to arrange a meeting or call to discuss, at your convenience.

Warmest regards,
Dania

Dania Chehab, P.Eng., M.Eng., ENV SP (she/her)

Project Manager, Water & Wastewater

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300, Toronto ON M2J 4Z8
t 416 497 8600 ext. 1456 |
LinkedIn | Facebook | Website

R.V. Anderson Associates Limited has been engaged in the provision of professional engineering, operations, and management services since 1948. This message is intended only for the use of the individual(s) to whom it is addressed. If you are not the intended recipient(s), disclosure, copying, distribution and use are prohibited; please notify us immediately and delete this email from your systems. Please see http://www.rvanderson.com for Copyright and Terms of Use.

R.V. Anderson Associates Limited has been engaged in the provision of professional engineering, operations, and management services since 1948. This message is intended only for the use of the individual(s) to whom it is addressed. If you are not the intended recipient(s), disclosure, copying, distribution and use are prohibited; please notify us immediately and delete this email from your systems. Please see http://www.rvanderson.com for Copyright and Terms of Use.

Nikash Persaud

From: Dania Chehab
Sent: February 8, 2024 9:04 AM
To: Nikash Persaud
Subject: FW: Township of Cavan Monaghan Water/Wastewater Master Servicing Study
Attachments: Township of Cavan Monaghan Water Wastewater Master Servicing Study Jan 2024.pdf

---

From: Julie Kapyrka <jkapyrka@alderville.ca>
Sent: Monday, January 29, 2024 10:47 AM
To: Dania Chehab <dchehab@rvanderson.com>
Cc: Taynar Simpson <tsimpson@alderville.ca>
Subject: Township of Cavan Monaghan Water/Wastewater Master Servicing Study

Aaniin Dania,

Please find attached correspondence.

Miigwech.
All the best,

Dr. Julie Kapyrka Consultation
(
Alderville First Nation
Administration Office
11696 Second Line Rd.
Roseneath, ON K0K 2X0
Office: 905-352-2662
jkapyrka@alderville.ca

ALDERVILLE FIRST NATION

11696 Second Line Road
Roseneath, Ontario K0K 2X0
Phone: (905) 352-2011
Fax: (905) 352-3242
www.alderville.ca

Chief: Taynar Simpson
Councillor: Dawn Marie Kelly
Councillor: Lisa McDonald
Councillor: Nora Sawyer
Councillor: Jason Marsden

VIA E-MAIL

January 29, 2024

R.V. Anderson Associates Limited
Dania Chehab, P.Eng., M.Eng., ENV SP
2001 Sheppard Avenue East, Suite 300
Toronto, ON M2J 4Z8
Tel: (416) 497-8600 ext. 1456
DChehab@rvanderson.com

Dear Dania Chehab,

RE: Township of Cavan Monaghan Water/Wastewater Master Servicing Study

I would like to acknowledge receipt of your correspondence, which was received December 21st, 2023, regarding the above noted project.

As you may be aware, the area in which your project is proposed is situated within the Traditional Territory of Alderville First Nation. Our First Nation's Territory is incorporated within the Williams Treaties Territory and was the subject of a claim under Canada's Specific Claims Policy, which has now been settled. All 7 First Nations within the Williams Treaties have had their harvesting rights legally re-affirmed and recognized through this settlement.

In addition to Aboriginal title, Alderville First Nation rights in its Reserve and Traditional Territory and/or Treaty Territory include rights to hunt, fish and trap, to harvest plants for food and medicine, to protect and honour burial sites and other significant sites, to sustain and strengthen its spiritual and cultural connection to the land, to protect the Environment that supports its survival, to govern itself, sustain itself and prosper including deriving revenues from its lands and resources, and to participate in all governance and operational decisions about how the land and resources will be managed, used and protected.

Alderville First Nation is requiring a File Fee for this project in the amount of $300.00. This Fee includes administration, an initial meeting, project updates as well as review of standard material and project overviews. Depending on the number of documents to be reviewed by the Consultation Department, additional fees may apply. **Please make this payment to Alderville First Nation and please indicate the project name or number on the cheque.**

If you do not have a copy of Alderville First Nation's Consultation Protocol, it is available at: alderville.ca/wp-content/uploads/2017/02/AFNProtocol2.pdf. Please note that the mapping in this document needs updating to reflect the Williams Treaties First Nations Settlement Agreement 2018.

In order to assist us in providing you with timely input, please provide us with a Notice of Request to Consult containing relevant information and material facts in sufficient form and detail to assist Alderville First Nation to understand the matter in order to prepare a meaningful response. Guidance for giving notice can be found on pages 11-12 of our Consultation Protocol. Based on the information that you have provided us with respect to the notice of the **Township of Cavan Monaghan Water/Wastewater Master Servicing Study,** Alderville First Nation may require a mutual agreement to establish a special consultation process for this project. After the information is reviewed it is expected that you or a representative will be in contact to discuss this matter in more detail and possibly set up a date and time to meet with Alderville First Nation in person.

Although we have not conducted exhaustive research nor do we have the resources to do so, there may be the presence of burial or archaeological sites in your proposed project area. Please note, that we have particular concern for the remains of our ancestors. Should excavation unearth bones, remains, or other such evidence of a native burial site or any other archaeological findings, we must be notified without delay. In the case of a burial site, Council reminds you of your obligations under the *Cemeteries Act* to notify the nearest First Nation Government or other community of Aboriginal people which is willing to act as a representative and whose members have a close cultural affinity to the interred person. As I am sure you are aware, the regulations further state that the representative is needed before the remains and associated artifacts can be removed. Should such a find occur, we request that you contact our First Nation immediately.

Furthermore, Alderville First Nation also has available, trained Archaeological Liaisons who can actively participate in the archaeological assessment process as a member of a field crew, the cost of which will be borne by the proponent. Alderville First Nation expects engagement at Stage 1 of an archaeological assessment, so that we may include Indigenous Knowledge of the land in the process. We insist that at least one of our Archaeological Liaisons be involved in any Stage 2-4 assessments, including test pitting, and/or pedestrian surveys to full excavation.

Although we may not always have representation at all stakeholders' and rights holders' meetings, it is our wish to be kept apprised throughout all phases of this project.

Should you have further questions or if you wish to hire a liaison for a project, please feel free to contact Julie Kapyrka, Consultation Coordinator, at 905-352-2662 or via email at jkapyrka@alderville.ca .

Yours sincerely,



Chief Taynar Simpson
Alderville First Nation

Nikash Persaud

From: Dania Chehab
Sent: February 21, 2024 1:26 PM
To: Julie Kapyrka
Cc: Taynar Simpson; Wayne Hancock; Nikash Persaud; Rika Law
Subject: RE: Township of Cavan Monaghan Water/Wastewater Master Servicing Study
Attachments: 205371-20240220 - Alderville First Nation Notice of Request to Consult - vF.pdf

Good afternoon Dr. Kapyrka,

Thank you for your correspondence on behalf of Alderville First Nation. We have prepared the enclosed letter and Notice of Request to Consult, in line with AFN's protocols.

As indicated in the enclosed, the Master Servicing Study (MSS) was conducted as a high-level infrastructure planning document and additional investigations and environmental assessments will be completed in the future to support projects resulting from the MSS. The Township would like to continue engaging and consulting with AFN beyond the MSS, and we have outlined the upcoming works in our letter.

We would also be happy to meet at your offices to discuss these upcoming projects, if AFN would welcome us; in anticipation, our availability is below, and we can extend further if these dates/times do not work for your team. The Township will also prepare and issue the requested $300 payment and can provide it either by mail or during this meeting.

- March 1 anytime
- March 5 in the afternoon
- March 6 in the afternoon
- March 7th anytime

Thanks very much,
Dania

Dania Chehab, P.Eng., M.Eng., ENV SP (she/her)
Project Manager, Water & Wastewater

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300, Toronto ON M2J 4Z8
t 416 497 8600 ext. 1456
LinkedIn | Facebook | Website

From: Julie Kapyrka <jkapyrka@alderville.ca>
Sent: Monday, January 29, 2024 10:47 AM
To: Dania Chehab <dchehab@rvanderson.com>
Cc: Taynar Simpson <tsimpson@alderville.ca>
Subject: Township of Cavan Monaghan Water/Wastewater Master Servicing Study

Aaniin Dania,

Please find attached correspondence.

Miigwech.
All the best,

Dr. Julie Kapyrka Consultation Coordinator

Alderville First Nation

Administration Office
11696 Second Line Rd.
Roseneath, ON K0K 2X0
Office: 905-352-2662
jkapyrka@alderville.ca

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300
Toronto ON M2J 4Z8 Canada
T 416 497 8600 **F** 855 833 4022
rvanderson.com

RVA 205371

February 20, 2024

Dr. Julie Kapyrka
Alderville First Nation
11696 Second Line Road
Roseneath, Ontario
K0K 2X0

Dear Dr. Kapyrka,

Re: Township of Cavan Monaghan Water and Wastewater Master Servicing Study
Notice of Request to Consult with Alderville First Nation

Thank you for responding to our December 21, 2023 correspondence and sharing a summary of interests and rights on behalf of Alderville First Nation (AFN). Please accept our Notice of Request to Consult on behalf of the Township of Cavan Monaghan.

For context, the Water and Wastewater Master Servicing Study (MSS) was conducted as a high-level infrastructure planning study that is focused specifically on municipal water and wastewater infrastructure services to support growth to 2051.

Many of the projects identified through the MSS are subject to additional studies and investigations before proceeding to implementation. These additional studies and investigations are required to fulfill regulatory requirements, such as the Ontario Environmental Assessment Act, Water Resources Act, and Environmental Protection Act and future permits and approvals. We have summarized the future studies and investigations that will be completed outside of the MSS in the table below.

We initiated our correspondence under the MSS in November 2020 through the Notice of Commencement, but wish to reinforce that the Township values its relationship with AFN beyond just the MSS. As such, we ask that this Request to Consult apply to the below list of water and wastewater projects stemming from the MSS as the Township's commitment to continued engagement and consultation with AFN.

BEST MANAGED COMPANIES Platinum member

Infrastructure Component	Preferred Servicing Approach
Water Supply	**Increase the existing groundwater well supply through new supply wells or by increasing the draw from the existing well supply.** Additional study, including hydrogeological investigation, is required to confirm feasibility and suitability of this approach and a further Schedule B Class EA, or an Archaeological Screening Process (ASP) will be completed by the Township in the future, prior to construction.
Water Storage	**Increase water storage in Millbrook by adding an additional water storage facility in a new location.** To confirm the location, storage type and capacity of the future storage solution, a Schedule B Class EA will be completed by the Township in the future, prior to construction. **Increase the capacity of the existing Millbrook Booster Pumping Station (BPS) to service development growth near the existing standpipe.** This project is exempt from the Class EA process and can move forward immediately to the design/implementation phase.
Wastewater Treatment	**Increase wastewater treatment capacity in Millbrook by expanding the Millbrook Wastewater Treatment Plant (WWTP).** The Township will complete a future Schedule C Class EA to confirm feasibility, treatment technology, and footprint requirements for this expansion. An Assimilative Capacity Study (ACS) will also be completed to inform the future Schedule C Class EA and environmental approvals.
Wastewater Conveyance	**Convey wastewater from the North Catchment of Millbrook via the Tupper Street SPS to the East Sewer Shed of the Millbrook WWTP.** This project is exempt from the Class EA process and can move forward immediately to the design/implementation phase.

We also note that the Stage 1 Archaeological Assessment (AA) was prepared to inform the MSS and future Class EAs, as above. The Stage 1 AA has not yet been filed with the Ministry of Citizenship and Multiculturalism (MCM). We welcome your comments in advance of filing with the MCM and appreciate if you would confirm your estimated timelines for doing so.

We hope to issue the Notice of Completion and final MSS document for Public Review in the coming weeks, but are committed to continuing to engage openly with AFN after conclusion of the MSS.

As indicated in your correspondence and in reference to the Consultation Protocol, we have provided the requested information for the Notice of Request to Consult, enclosed. We would also like to schedule an in-person meeting with AFN staff at your office, if you would welcome us. In anticipation, we will provide availability via email and work with you to coordinate a suitable time.

Once again, we thank you for your correspondence. We look forward to continuing our discussions with AFN and speaking with you further on upcoming Township infrastructure projects.

Chi Miigwetch, yours very truly,

R.V. Anderson Associates Limited
Dania Chehab, P.Eng., M.Eng., ENV SP
Project Manager
2001 Sheppard Avenue East, Suite 300
Toronto, ON M2J 4Z8
Tel: (416) 497-8600 ext. 1456
DChehab@rvanderson.com

Township of Cavan Monaghan, Public Works
Wayne Hancock, P.Eng.
Director of Public Works
988 County Road 10
Millbrook, ON L0A 1G0
Tel: (705) 932-9327
WHancock@cavanmonaghan.net

Notice of Request to Consult

Proponent

The Township of Cavan Monaghan is the proponent undertaking the MSS and its resulting projects. R.V. Anderson Associates Limited (RVA) has supported the Township as their engineering consultant for the MSS process and will additionally be supporting the upcoming Class EA for Water Storage.

Scope, Timing, and Location

We have described the scope and timing for the MSS, above, and have summarized the Scope, Timing, and Location of projects resulting from the MSS in the below table.

As noted in our letter, we wish to issue the Notice of Completion for the MSS but the Township commits to continue engaging with Alderville First Nation (AFN) during future studies and investigations stemming from the MSS.

Project List, Effects on AFN & Traditional Territories, Proposed Consultation Process, and Expectations & Limitations

Included below is a table outlining the MSS and the projects resulting from it, the effects on AFN and its Traditional Territories, and the proposed Consultation Process.

Studies

To support the MSS and future projects stemming from the MSS, a Stage 1 Archaeological Assessment was completed. This study is available for your review and has been attached for ease of reference along with a draft copy of the MSS.

The final copy of the MSS will also be circulated to AFN upon publication, for your reference.

An Assimilative Capacity Study (ACS) is being completed at Baxter Creek in support of the future EA for expansion of the Millbrook Wastewater Treatment Plant (WWTP). The study is in progress.

Approvals

There are no approvals associated with the current MSS project, outside of filing with the Ministry of Environment, Conservation, and Parks (MECP).

Future projects will be subject to various approvals depending on specific scope and could include Drinking Water Works Permits (DWWP), Environmental Compliance Approvals (ECA), Permit to Take Water (PTTW), and others. For projects requiring additional Class EA, approvals requirements would be better understood as the Class EA and any supporting investigations progress. For projects that do not require additional Class EA study, approvals requirements would be better understood once design begins.

Important Dates & Deadlines

We anticipate issuing the Notice of Completion for the MSS in the coming weeks. The MSS Report will be available for review for 30 calendar days after the issuance of the Notice of Completion, and the MSS report will be finalized after that time.

Project List Table

Intended Projects and Activities	Scope	Timelines	Effects on AFN & Traditional Territories	Planned Consultation Activities, Expectations and Limitations
Master Servicing Study	• High level water and wastewater infrastructure planning to provide servicing for growth mandated by province • Desktop study informed by Stage 1 AA	• Project is near complete • Notice of Completion to be issued in February/March 2024	• Additional studies and investigations are required for major works, as outlined below; Township will consult with Alderville First Nation during those more detailed investigations. • Less complex works such as upgrades to sewers or watermains will be limited to existing disturbed areas and roads. Such works would not be subject to additional study and would proceed to design and construction; however, specific timelines will vary.	Planned Consultation Activities: • Continued communication and engagement in future projects resulting from the MSS. Limitations: • The MSS has generally concluded; however, many of the projects identified through the MSS require additional future study prior to construction. The Township wishes to conclude the MSS, but commits to consult with AFN during the future studies, as outlined in this correspondence.
Water Storage Class EA	• Schedule B Class EA to confirm capacity and location of proposed water storage facility in Millbrook • May require Stage 2 AA and natural	• Commencing Winter 2024	• Study area would be located on Williams Treaty and Gunshot Treaty lands. • Effects would depend on specific site locations, to be developed through the Class EA.	Planned Consultation Activities: • Provide project Notices (Notice of Commencement, Public Information Centre, Notice of Completion). • Provide project updates at key project milestones coinciding with the above project notices.

Intended Projects and Activities	Scope	Timelines	Effects on AFN & Traditional Territories	Planned Consultation Activities, Expectations and Limitations
	environment field investigations, depending on selected site (not yet known)			• Provide copies of desktop environmental, archaeological, and cultural heritage studies that were previously completed (if applicable). • Provide list of planned environmental, archaeological, and cultural heritage studies (desktop and field) that will be completed through the project. • Provide reasonable advanced notice and invitation to AFN staff to attend field investigations (archaeological and environmental) and coordinate scheduling, where possible. • Provide copies of environmental, archaeological, and cultural heritage studies that were prepared through the project. • Two-way knowledge sharing and, at AFN's discretion, AFN sharing of oral histories for archaeological and cultural heritage studies. • Receive input from AFN pertaining to each project as it occurs for consideration into project. Limitations: • None anticipated at this time
Tupper Street Sewage Pumping Station (SPS) Upgrades	• Upgrades to existing SPS, confined to existing facility footprint and property which is already previously disturbed	• Not Yet Commenced (Short Term)	• Study area would be located on Williams Treaty and Gunshot Treaty lands. • We anticipate that effects on AFN and Traditional Territory caused by this upgrade project would be low; work would be within existing SPS building and property which is already previously disturbed.	
Millbrook Water Booster Pumping Station (BPS) Upgrades	• Upgrades to existing Millbrook BPS, confined to existing facility footprint and property which is already previously disturbed	• Not Yet Commenced • (Short Term)	• Study area would be located on Williams Treaty and Gunshot Treaty lands. • We anticipate that effects on AFN and Traditional Territory caused by this upgrade project would be low; work would be within existing BPS building and property which is already previously disturbed.	
Millbrook Water Supply Class EA	• Class EA for additional groundwater supply and water taking	• Class EA Not Yet Commenced (Medium Term)	• Study area would be located on Williams Treaty and Gunshot Treaty lands. • Effects not yet known; to be revisited closer to project start.	

Intended Projects and Activities	Scope	Timelines	Effects on AFN & Traditional Territories	Planned Consultation Activities, Expectations and Limitations
	• Hydrogeological investigation to inform the Class EA	• Hydrogeological Investigation not yet commenced		*As indicated in the row above*
New SPS Class EA	• Schedule B Class EA or Archaeological Screening Process (ASP), if applicable, for a new SPS and replacement of a section of forcemain near the Millbrook WWTP	• Not Yet Commenced (Long Term)	• Study area would be located on Williams Treaty and Gunshot Treaty lands • Effects not yet known; to be revisited closer to project start.	
Millbrook Wastewater Treatment Plant (WWTP) Expansion Class EA	• Schedule C Class EA for capacity expansion of the Millbrook WWTP • Assimilative Capacity Study (ACS) currently under way to inform this Class EA	• Class EA Not Yet Commenced (Long Term) • ACS underway and will inform the Class EA	• Study area would be located on Williams Treaty and Gunshot Treaty lands • Effects not yet known; to be revisited closer to project start.	

Contacts

Township of Cavan Monaghan (Proponent)		
Wayne Hancock, P.Eng. Director of Public Works 988 County Road 10 Millbrook, ON L0A 1G0 Tel: (705) 932-9327 WHancock@cavanmonaghan.net	**Yvette Hurley** Chief Administrative Officer 988 County Road 10 Millbrook, ON L0A 1G0 Tel: (705) 932-9328 YHurley@cavanmonaghan.net	**Jessica Fradley** Water/Wastewater Technician 988 County Road 10 Millbrook, ON L0A 1G0 Tel: (705) 932-9348 JFradley@cavanmonaghan.net
R.V. Anderson Associates Limited (Consultant for MSS and upcoming Water Storage Class EA)		
Dania Chehab, P.Eng., M.Eng., ENV SP Project Manager 2001 Sheppard Avenue East, Suite 300 Toronto, ON M2J 4Z8 Tel: (416) 497-8600 ext. 1456 DChehab@rvanderson.com	**Rika Law, P.Eng., PMP** Project Director 2001 Sheppard Avenue East, Suite 300 Toronto, ON M2J 4Z8 Tel: (416) 497-8600 ext. 1209 RLaw@rvanderson.com	

Correspondence After Public Information Centre

~

Public Members

Nikash Persaud

From: [redacted]
Sent: Monday, July 17, 2023 8:26 AM
To: Dania Chehab <dchehab@rvanderson.com>; whancock@cavanmonaghan.net
Cc: 'John Connolly' <jconnolly@cavanmonaghan.net>; 'Karen Ellis' <kellis@cavanmonaghan.net>; Rika Law <rlaw@rvanderson.com>; [redacted]; [redacted]
Subject: CM Future Water & Wastewater Servicing Presentation June 21, 2023 - Supplemental Comments/Questions

[CAUTION EXTERNAL EMAIL] Make Sure that it is legitimate **before** Replying or Clicking on any links

Good Morning:

As a result of information provided at the June 21st, 2023 Public Information meeting, attached you will find supplemental questions and comments in addition to the questions and comments previously submitted on June 8, 2023.

It is hoped all questions and answers will become part of the public record in a transparent manner similar to the comments, questions and responses which were made widely available when the Class EA on Water and Wastewater servicing was undertaken in 2013-2014.

We look forward to your response.

Yours truly

[redacted]

[redacted]

Supplemental Questions Post Public Meeting

Additional Wastewater Servicing Questions

The developer of the CSU residential application has indicated that:

"We confirm the intent is to have the wastewater treatment plant drain to the SWM pond. The design will be refined at detailed design once the final design of the wastewater treatment plant is available"

The functional servicing report indicates the drainage area for the south SWM pond is 10.81 ha. The pond itself will encompass 1.285 ha.

How much effluent will be discharged on a daily basis into the south stormwater pond? Will the SWM pond be able to handle both stormwater and wastewater discharge? Is there a contingency plan for excess overflow caused by either climatic, mechanical or other conditions?

Wastewater plants emit odours that are offensive and often intolerable. Weather conditions can intensify odours. Temperature inversions, wind velocity, and wind direction contribute to how far odour emissions drift. Odours are worse at higher temperatures – like the summer when people are often engage in outdoor activities. There are no setbacks from either the proposed residential development or the existing subdivision listed in the CSU diagrams for the proposed wastewater treatment plant and the stormwater pond.

What is the setback for the SWP from residential developments – both existing and proposed? What measures will be in place to control odours? How effective will those controls be since it is hard to imagine that effluent discharged into a SWM pond will be odour-free? (SWM ponds often are stagnant).

Is there a contingency plan if the odour controls are ineffective?

.Peel residents to pay $9.5M for odour mitigation at Mississauga wastewater plant next to giant lakefront development | The Pointer

There are proposals for two additional wastewater treatment plants – one in Millbrook (CSU) and one in Fraserville (Kawartha Downs). The Millbrook WWTP is at capacity and will have to be expanded. The effluent from all 3 plants will ultimately discharge into the Otonabee River into Rice Lake then into the Trent River to the Bay of Quinte and Lake Ontario.

" In Ontario, the largest tributary sources of Tributary Phosphorus were from the ***Trent River (200 mT/year),*** *the Humber River (93.0 mT/year), and the Welland Canal (80.8 mT/year)."* (PDF) Tributary phosphorus loading to Lake Ontario (researchgate.net)

The City of Peterborough Watershed Planning Study Water Quality Modeling Report April 2021 notes that phosphorus levels in the Otonabee River are already excessive at times:

Water quality monitoring results from the PWQMN indicate that in general, concentrations for all water quality parameters of interest inside the Otonabee River are within the accepted thresholds defined by the PWQO and CWQG. **However, in some instances, concentrations of Copper, Total Phosphorus and Zinc have been observed to exceed the targeted thresholds, making the effective treatment of these water quality constituents a priority for future water quality initiatives.**

Table 7: Summary of PWQMN Observations for Total Phosphorus (2000-2019). Values are Colored Green if they are Below the Target Water Quality Objective and Red if They Exceed the Target Threshold.

Station #	Location	Total Phosphorus (µg/L)				PWQO
		Mean	Median	Maximum	Minimum	
17002107002	LOCK 19 DAM, PETERBOROUGH	16.62	15.00	96.00	0.00	30 µg/L
17002100802	PETERBOROUGH CNTY RD 2, BENSFORT BRIDGE	18.61	18.00	84.00	0.00	30 µg/L
17002114402	MATCHETT LN, DRISCOLLS COTTAGES	22.88	20.00	145.00	0.00	30 µg/L
17002101102	HWY 7 BRIDGE, WEST SIDE, PETERBOROUGH	22.94	20.00	67.00	10.00	30 µg/L
17002106502	LOCK 25, PETERBOROUGH CNTY RD 32,	15.29	14.55	41.00	0.00	30 µg/L
17002101302	NASSAU MILLS RD, N. OF PETERBOROUGH	16.85	16.00	32.00	8.00	30 µg/L
All Stations Combined	Various	18.18	16	145.00	0	30 µg/L

Millbrook wastewater treatment plants discharges into Baxter Creek which ultimately ends up discharging into the Otonabee River. The CSU (Fallis West & East) proposals propose a wastewater treatment plant that will first discharge into a stormwater pond, then into Baxter Creek. The Kawartha Downs development proposes 3 possible discharge points, the Otonabee River, Cavan Creek a tributary to the Otonabee River and the Cavan wetland. "*All three potential receivers outlet to Rice Lake, with both Cavan Creek and the wetland complex discharging to the Otonabee River as an intermediate receiver."*

Phosphorus loads can also fluctuate over time due to constantly changing factors such as weather. Aside from wastewater discharge, phosphorus is transported into waterways during rainfall and snowmelt event, so an increased water flow will result in an increased phosphorus load level. Even if the phosphorus concentration level is low in a tributary, such as a river or stream, but the water flow is increased due to heavier than normal precipitation, the phosphorus load could also increase.

What will the cumulative phosphorus loading be? Will climate change (increased intense rainfall events) be factored in? Will the loading levels comply with Bay of Quinte Remedial Action Plan (BQRAP) and specifically the Phosphorus Management Plan which aims to maintain the TP limit for WWTPs discharging to the watershed at 0.1 mg/l? (Reports for the Kawartha Downs development have indicated the 200 unit hotel is currently excluded from TP levels).

One of the possible options discussed at the Public Information meeting is that the loading restrictions might be raised by the MEPC.

If MEPC agrees to raise the restrictions levels, doesn't this set a dangerous precedent not only locally, but province-wide? At the public meeting it was noted that there are 32 large-scale wastewater systems that discharge into the Otonabee/RiceLake/Trent River system – all that then could also seek an increase in allowable TP discharge levels. The wastewater capacity for the City of Peterborough is also at capacity. If TP discharge restrictions are raised for Millbrook, would it not seem reasonable for the City of Peterborough to also ask for the same?

Will Rice Lake residents, and community associations be consulted about any changes to permitted phosphorus loading levels?

The storyboards map with the Millbrook settlement area includes the CSU residential development which includes a proposal to construct a separate wastewater treatment plant. However, there is no mention of this wastewater treatment plant in the presentation boards that only recommend expansion of the existing wastewater facility in Millbrook.

It appears the proposed CSU wastewater treatment plant and its capacity has been excluded? If so, why has it been excluded?

Will the loading study presently apparently currently being conducted on Baxter Creek include the anticipated discharge from the CSU development? Will that study be released to the public?

The storyboard recommendation expansion of the existing water treatment plants notes: "*Capacity expansion from 8242 m3 /day (existing) to 13,316 m3 /day (year 2051), based on peak flows".*

The peak flows are based on primarily residential capacity since Millbrook currently lacks significant commercial and/or industrial facilities. However, the MZO for the Fallis East development includes a large commercial area plus lands designated for future industrial and commercial zoning in the Official Plan.

Will 20% capacity be directed to future commercial/industrial needs? Will it be sufficient to meet both residential and commercial/industrial needs? How will that be determined?

The proposed recommendations include a new water storage facility and expansion of the Millbrook wastewater treatment plant.

What is the estimated cost of these two facilities?

On June 26, 2023 CM Council adopted By-Law 2023-48 – an updated Sewer By-law.

The report states:

"With the Water and Wastewater Master Servicing Study underway, the Township is looking to reduce the unnecessary discharge of stormwater and groundwater from private sump pumps and roof drains in order to provide more treatment capacity, and lower operational costs at the Wastewater Treatment Plant. The Township is planning to introduce a sump pump disconnection program that will include public education and outreach, inspections, and by-law enforcement. Township staff will take inventory of illegal sewer connections and help find alternative solutions for property owners." filestream.ashx (escribemeetings.com)

What is the anticipated decrease in stormwater and groundwater flow by the implementation of the sump pump disconnection program? How many households will be affected?

Additional Water Servicing Questions

It was noted at the public meeting that Cambium has been retained to investigate the capacity of the aquifer that currently serves Millbrook. That study will also look at possible interference with other private wells that draw on the aquifer as well some outside the area of the aquifer. The storyboard indicates a final report is expected early 2024.

The second phase of this massive 718 residential unit development is currently under construction but may not be completed by 2024. Wouldn't it be more accurate and that would endorse the precautionary principle and sustainability to investigate the Millbrook aquifer after this residential development has been completed and inhabited and before any further development can go forward?

The County of Peterborough just released its approved Official Plan and indicates that 34% of total residential housing has been allocated to Cavan Monaghan with most of that housing directed towards Millbrook. The County Plan states:

9.2 Watershed Planning (page 162-163) The County of Peterborough and local Municipalities are committed to implementing a watershed-based approach to land use planning and water management. *Watershed planning and land use planning is undertaken to support a comprehensive, integrated, and long-term approach to the protection, enhancement, or restoration of the quality and quantity of water within a watershed. The integration of watershed and land use planning together can be achieved through a watershed management plan.*
A watershed management plan is a document which is informed by science and designed to identify water resource systems, and to protect, enhance or restore the quality and quantity of water within a particular watershed*. It assumes a broad ecosystem approach to natural resource features that are water-related, provides a comprehensive understanding of ecological form and function within the watershed, provides watershed-wide policy directions, delineates subwatershed planning areas and identifies priorities for further detailed studying. Peterborough County Council has committed to undertake a watershed management plan starting in 2023 in collaboration with local Municipalities and Conservation Authorities, and has allocated funding for this project. When prepared, a watershed plan will provide information and a framework for future land use decisions, and may identify subwatershed areas and water resource systems. This Official Plan may, in turn, be amended to reflect the broad directions, goals and targets established in the watershed plan."*

The County Plan also states:
9.7 Highly Vulnerable Aquifers and Groundwater Recharge Areas (page 179)
Highly vulnerable aquifers and significant groundwater recharge areas cover most of the County and, as such, these areas have not been identified on Schedules to this Plan but are illustrated on maps contained in the Trent Assessment Report. However, impacts of development applications on groundwater will be considered in planning decisions. Where a major development application within these areas could have an effect on the ground water quality or quantity, studies may be required to demonstrate that the quality and quantity of groundwater in these areas and the function of the recharge areas will be protected, improved, or restored. The requirement for, and scope of, these studies will be determined in consultation with the local conservation authority and/or the Province. Mitigative measures and/or alternative development approaches may be required in order to protect, improve or restore sensitive surface water features, sensitive ground water features, and their hydrological functions.

The County Official Plan supports the question asked in the first set of questions that were submitted ....Wouldn't completing a requisite watershed plan and water budget *first* before any future development is permitted then provide a measure of water safety and security and sustainability?

Real estate listings for residences in the new Highlands subdivision indicate that each residence has between 3 and 5 complete bathrooms. The expectation is the 718 residential unit development being constructed will also offer 3 to 5 full bathrooms per unit.

In the interest of sustainability, can restrictions such as only 2 full bathrooms per residential unit be applied and enforced?

The Millbrook Municipal Services Allocation Study Ref. No.: 6677-001 2018-07-11 notes:
"It should also be noted that the water consumption records between 2015 and 2017 contained two outliers. In particular, these outliers corresponded to the properties located at 4 Tupper Street, Millbrook, Ontario and the community centre, which represents the existing arena located at 4 Needlers Lane, Millbrook, Ontario. Each of these properties had a water consumption record of approximately 100,000 m3 for the periods between July 1, 2016 to August 31, 2016, and November 1, 2016, to December 31, 2016, respectively. In addition, the Millbrook Bulk Water Filling Station uses approximately 20,000 m 3 of water annually. Although the water consumption records for these periods were eliminated from the general trends displayed in Figure 6 to Figure 8, these spikes in water consumption should also be considered for these properties and any other properties that serve a similar purpose in the future."

Can restrictions be imposed on new commercial and/or industrial ventures?

Note: The 20,000 m 3 drawn by the Bulk Filling Station dates to 2016. How much was withdrawn each year from 2017 to 2022? This is a critical outlet for the agricultural community and cannot be decommissioned. Will the annual amount of water withdrawn through the Bulk Filling Station be factored in the amount available for safe and secure water servicing?

In a report to Council presented by Watson and RVA October 18 2021 it was estimated that:
Servicing for short term growth – i.e. 2026 estimated to be" a further 872 units and 1094 employees would require upgrades to the existing facilities including rerating the wwtp to 3,000m3/day upgrades to Tupper St sps booster pumping station capacity with a preliminary cost of $1.4 million
SERVICING OF LONG-TERM GROWTH (2041)– anticipated • Servicing for: 3,338 residential units (1,690 additional from 2026 • Required facility WWTP expansion

(addition of 3rd train) Potential new SPS for North employment lands Groundwater exploration, WTP expansion (well supply and treatment) o New BPS (depending where growth occurs) o Construction of new 2,115 m3 WST (location dependent on where growth occurs) o These upgrades will require another Class EA prior to design and construction o Total project (engineering + capital) cost estimate of ~$38M (Anticipated to be funded by Development Charges)

Now that the Province has changed development charges that will be received by Municipalities will there in fact be sufficient funds to cover the short and long term capital costs?
No doubt the 2021 cost estimates will have increased since. What are the estimated costs for short term and long term expansion and upgrades now?

The Ontario "More Homes Built Faster Act" could have a huge impact on the water and wastewater system in our Municipality. Allowing 3 units on a residential lot will result in much greater intensification.

How will the study take into consideration the additional water and wastewater servicing needs for this policy change?

In Section 1.4 of the Official Plan it is stated;

*It is anticipated that the new residential development during the life of this Plan will be distributed throughout the Township as follows: Location Households Millbrook 1,000 *Hamlets 115 *Countryside Areas 240 TOTAL 1,355 * Subject to an appeal with respect to the policies applicable to Special Study Area 1 as identified on Schedule A*

Once the 718 homes in Towerhill North are built that growth target of the existing Official plan will be met.

Will any further growth be put on hold until a new official plan has been approved in order to ensure sustainability?

Section 2.1.1 of the Official Plan states: *that the Township will manage population growth in a sustainable manner. This goal will be achieved by planning for residential growth of approximately sixty five (65) residential units per year to the year 2031, with most directed to the Millbrook urban serviced area. This will be accomplished by ensuring development in the urban area i) is sequential and phased to provide for the continuous and orderly development of the community. ii) is developed to a density that will make economical use of existing infrastructure and services iii) supports intensification and integrates with existing residential areas iv) will not have an adverse effect on the Township's financial situation.*

The Township has in fact achieved its OP sustainability goal now with the Towerhill North in process along with the completion of Towerhill South Coldbrook and intensification.
Will any further development be deferred until 2031until the investigation, design and construction upgrades required have been completed?

Last summer, several private wells just outside of Millbrook went dry. Residents in a subdivision in the nearby hamlet of Garden Hill have noted the water quantity of the aquifer that provides a water source for only 50 residential units has decreased significantly and that the water quality has changed requiring expensive filtration systems. Dr. David Sharpe, an expert on the hydrogeology of the Oak Ridges Moraine has noted that even after decades of study, there are still many unknowns.

What are the terms of reference for the studies on the Millbrook aquifer? Will the hydrogeological investigation extend beyond the Wellhead Protection Area? Will residents serviced by private wells outside the Wellhead Protection Area be contacted? (Local water haulers are aware of where area wells have run dry.) There is no identified/described wellhead protection zone for the alternative site 1256 Syer Line. What are the terms of reference for investigation for that well site and aquifer?

Is there a contingency plan in place, if water security and safety is compromised? If so, what is the contingency plan?
Rural homeowners asked to monitor wells, get water tested as drought conditions continue | CTV News

Nobody seems to know why wells are going dry in Clarington | CBC News

Drying wells have Halton Hills residents looking for answers - Halton Hills News (haltonhillstoday.ca)
No water for nearly 2 months for Muskoka couple after well runs dry (muskokaregion.com)
Innisfil wells run dry during drought conditions - Barrie News (barrietoday.com)
Dry wells cause for concern in Carlisle (thespec.com)
A Low Water Resource for Homeowners with Private Wells — Municipality of Marmora and Lake
Where Has All the Water Gone? (friendsofsouthshore.ca)
Dried up wells and lack of rainfall spark calls for wider drinking water relief distribution - Halifax | Globalnews.ca

Indigenous Consultation

The PPS states: *The Province's rich cultural diversity is one of its distinctive and defining features. Indigenous communities have a unique relationship with the land and its resources, which continues to shape the history and economy of the Province today. Ontario recognizes the unique role Indigenous communities have in land use planning*

and development, and the contribution of Indigenous communities' perspectives and traditional knowledge to land use planning decisions. The Province recognizes the importance of consulting with Aboriginal communities on planning matters that may affect their section 35 Aboriginal or treaty rights. Planning authorities are encouraged to build constructive, cooperative relationships through meaningful engagement with Indigenous communities to facilitate knowledge-sharing in land use planning processes and inform decision-making

1.2.2 Planning authorities shall engage with Indigenous communities and coordinate on land use planning matters

Hiawatha First Nation is located on the shores of Rice Lake (and Cavan Monaghan is located within their lands under the Williams Treaty). Has Hiawatha been consulted about the proposed expanded wastewater plant as well as the other two proposed wastewater treatment plants?

Will Hiawatha First Nation as well Alderville First Nation be consulted on possible changes in allowable phosphorus loading?

The municipality of Cavan Monaghan is included as First Nations lands under Treaty 20, part of the William Treaties. This is a link to the map of fish sanctuaries under Treaty 20 which includes the coldwater trout stream Baxter Creek.

https://williamstreatiesfirstnations.ca/wp-content/uploads/2018/05/Treaty-20-Fish-Sanctuaries-Map.pdf

Have all indigenous communities been made aware of the proposals to increase wastewater and stormwater discharge into Baxter Creek – a recognized important coldwater trout stream? Have they been consulted about possible impacts to the fish populations?

Will the loading study presently apparently currently being conducted on Baxter Creek include the anticipated discharge from the CSU development? Will that study be released to the Indigenous community?

Nikash Persaud

To: Rika Law
Subject: RE: Cavan Monaghan Master Servicing Study - Additional Questions

From: [redacted]
Sent: Wednesday, September 6, 2023 10:02 AM
To: Dania Chehab <dchehab@rvanderson.com>; whancock@cavanmonaghan.net
Cc: 'John Connolly' <jconnolly@cavanmonaghan.net>; 'Karen Ellis' <kellis@cavanmonaghan.net>; Rika Law <rlaw@rvanderson.com>; [redacted]
Subject: Cavan Monaghan Master Servicing Study - Additional Questions

Good morning:

In light of the recently announced expected long delay of the construction of future residential and commercial units because of Hydro One and Enbridge limitations, we do have additional questions regarding water and wastewater servicing for Kawartha Downs which currently lacks an onsite water supply and wastewater outlet.

In a 2006 report prepared by Watson and Associates for the municipality, it indicated Kawartha Downs, which at the time was host only to harness racing, speedway events and casino used on average 80m3/day which was and is still drawn from the Millbrook aquifer. That report also stated at that time the wastewater allowance was 75m3/day - waste which was trucked and still is into the Millbrook wastewater facility.

Under the new ownership, more additional large events at Kawartha Downs have been taking place this year from concerts, to fairs to monster truck and demolition derbies and the expectation these large venues will continue on into 2024.
https://www.facebook.com/KDspeedway/

Questions…. What is the current daily water consumption and wastewater discharge at Kawartha Downs? Has the peak demand at these large events been measured? If so, what is the increase during these peak periods?

Respectfully,

[redacted]

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300
Toronto ON M2J 4Z8 Canada
T 416 497 8600 **F** 855 833 4022
rvanderson.com

RVA 205371

Monday, November 13th, 2023

[redacted]

[redacted]

Dear [redacted] & [redacted],

Re: Township of Cavan Monaghan Water and Wastewater Master Servicing Study
Response to Public Information Centre Questions

Thank you for attending the Public Information Centre (PIC) for the Township of Cavan Monaghan Master Servicing Study (MSS) and for providing your comments.

The MSS focuses on high-level strategies to provide municipal water and wastewater servicing to the Millbrook urban area, as identified in the Growth Management Strategy (GMS), with a planning horizon to 2051.

The MSS recommended the following solutions to provide water and wastewater servicing in the Millbrook Urban Area to 2051:

- Water Supply – expand existing groundwater well supply and/or find additional groundwater well supply.
- Water Storage – additional water storage volume at a new location
- Wastewater Treatment – expand existing wastewater treatment plant.

Each of these solutions will require a project specific Class Environmental Assessment, which can build upon the findings from the MSS.

The MSS PIC materials also included specific next steps required before the above solutions will be implemented, including:

1. Future Class Environmental Assessment (EA) studies recommended by the Master Servicing Study (MSS) will include hydrogeological studies which will analyse the hydrogeological conditions present, particularly to support the viability of additional well water supply at the existing municipal well field or at other location(s).
2. Currently, to support the future Class EA studies, a hydrogeological work plan is being developed to determine what will be included in the hydrogeological study.
3. Findings from the Assimilative Capacity Study (ACS) and Benthic Survey and other studies will be presented to the Ministry of Environment, Conservation and Parks (MECP). The

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300
Toronto ON M2J 4Z8 Canada
T 416 497 8600 **F** 855 833 4022
rvanderson.com

MECP will utilize the findings to inform their decision making and effluent levels will be confirmed by an Environmental Compliance Approval (ECA) as approved by the MECP.

For clarity and ease of information sharing we have organized your comments and our responses into the response table attached.

Thank you again for your engagement with the project and associated questions.

Yours very truly,

R.V. Anderson Associates Limited
Rika Law, P.Eng., PMP
2001 Sheppard Avenue East, Suite 300
Toronto, ON, M2J 4Z8
Tel: (416) 497 8600 ext. 1209
rlaw@rvanderson.com

Township of Cavan Monaghan, Public Works
Wayne Hancock, P.Eng.
Director of Public Works
988 County Road 10
Millbrook, Ontario, L0A 1G0
Tel: (705) 932-9327
Fax: (705) 932-3458
whancock@cavanmonaghan.net

#	COMMENT	SUPPLEMENTAL INFORMATION	RESPONSE	CATEGORY
1	What is the total of presumed residential and commercial units that will draw upon the Millbrook aquifer and/or the Syer Line well as proposed?	From the 2023 RV Anderson presentation to CM Council Towerhill North: 718 Units (draft approved 2021) Nina Court/Coldbrook Drive: 31 units (draft approved 2020) Vargas: 266 units w/ commercial (3rd resubmission, MZO 2022) CSU: 611 units w/ commercial (3rd resubmission, MZO 2022) Total # of units: • Draft approved, 749 units • In submission, 877 units • Total = 1,626 units Plus??? Turner 15T-19002 85 Units Duke Street – 192 units Centre St/King Street – 51 Units (Watson report July 26 2018 - 3 Storey Condo 18 units, 18 semis and 15 Townhouses Kawartha Downs – 517 units – the Valdor Functional Servicing report originally called for 696 units to be serviced by Millbrook wells. The updated application 15CD-22002 – calls for possible part servicing by the well located at 1256 Syer Line (owned by Township)– also being considered to service Millbrook) The Kawartha Downs application also includes the need for the servicing of a casino, an entertainment complex and a 200 room, 62,840 square foot hotel.	As per the Public Information Centre (PIC) on June 21st, 2023, the total estimated residential population with municipal water servicing is projected to be 10,455 by 2051, in accordance with the recommendations of the Growth Management Strategy (Watson, 2023). The total estimated employment is projected to be 3,983 by 2051. This does not include Kawartha Downs Development as that is outside of the Millbrook Urban Settlement Area.	Population
2	What is the current drawdown of the Millbrook aquifer? What is the anticipated drawdown for the 718 units for the Towerhill North development? What is the anticipated drawdown for 1626 plus units?	"Millbrook well are approximately 31 m deep and constructed in a confined artesian aquifer, and have above ground heads of approximately 6 m. The available drawdown in the each of the wells is approximately 30 m.", 5.4 Well Field Interference. - 2009 Golder Report	The Township of Cavan Monaghan's Permit to take Water (PTTW) for the Millbrook municipal wells provides a maximum day water supply of 3,000 m3/day. Existing maximum day water demand is approximately 1,000 m3/day, which is within the current PTTW for the municipal wells. It is anticipated that the Towerhill North development's water demands will be supported within the current PTTW limit. Before any further water taking occurs, additional hydrogeological investigations, including drawdown studies, will be undertaken to understand impacts and what is sustainable yield of the aquifer. After that, should the field pump tests confirm that additional water can be sustainably taken, then the Township can apply for a PTTW amendment. In addition, the Township is exploring other groundwater sources to supplement the existing municipal well field. The future hydrogeological investigation to be undertaken will also confirm water quantity and quality.	Hydrogeological Studies & Aquifer Conditions
3	Residents were told the old WST was going to be decommissioned but apparently that is not the case. Is there any surplus capacity in the two WST's?	In 2016, The Township committed to building a new water tower and to eventually, tear down its existing one - Option 3 - which stated – 'remove existing water tower'. However, the October 18, 2021, Watson report states that both water towers are required: - "WSTs operating at 95% of both tanks, with a total storage volume of 4,230 m"	The previous Water Storage Tank (WST) at King Street East was decommissioned (but not demolished) after the installation of the new WST near the Township Municipal Office. The decommissioned WST did not provide adequate flows/pressures for the system's current demands. Although it is still standing, it is no longer active nor connected to the water system and remains in place for communication services placed on top of the tank. The Township does still have plans to eventually demolish the decomissioned WST. The current WST located near the Township's Municipal Office has 2,115 m3 of useable volume and is projected to reach approximately 85% of its capacity by about 2027, depending on the pace of growth and development. Additional water storage capacity considerations (i.e. Class EA, design, construction) should commence within this approximate timeframe in order to provide sufficient water storage when the future water demand exceeds what can be provided by the current WST.	Water Supply
4	This report indicates there is not enough stored capacity to deal with possible fires. How much capacity will be required for the cumulative number of residential and commercial units? Will there be a need for an additional water tower?	The 2018 Cambium report stated: "An additional consideration that should be made for future planning decisions regarding the allotment availability of water services in Millbrook is the fire demand. Adequate water supply should be maintained at all times in the event of a fire. The Water Supply for Public Fire Protection document (1999), as prepared by the Fire Underwriters Survey indicates that an adequate supply of water for fire protection is provided when the maximum daily rate of water consumption is coupled with the ability to supply water at a rate of 2,000 litres per minute (l/min) (2880 m3 /day), or less, for a one (1) hour fire, at the minimum. The maximum daily raw water flow throughout 2017 in Millbrook was 1002 m3 /day. Therefore, in the case of a one (1) hour fire, this would exceed the 3000 m3 /day capacity of the Millbrook DWS. "	Provision of fire flows is a collective function of watermains, water storage tank, booster pumping station, well pumping station. The existing system (Water Storage Tank, Booster Pumping Station, Well Pumping Station) can support current fire flow requirements. Through the MSS, based on projections of residential/employment growth, the addition of a new WST to the water system is required to provide adequate fire flows in the near-term. To accommodate the growth to 2051, the required total storage volume is approximately 4,912 m3. As per the Public Information Centre (PIC) on June 21st, 2023, a Schedule B Class Environmental Assessment will be completed to confirm the location, capacity and type of storage which will be implemented.	Water Supply

#	COMMENT	SUPPLEMENTAL INFORMATION	RESPONSE	CATEGORY
5	How much water will be required to service all residential/commercial and industrial units – what is the 20 year plus expectation? What increase will be requested in a PTTW?	In 2009 it was reported Millbrook used on average, 656,000 litres per day. The maximum usage at the time was 1147m3/day. To service the proposed 1037 residential units (353 Millbrook and 684 in Fraserville), a PTTW for the Millbrook wells for an increase from the existing and still current 3000m3/day to 5374m3/day was sought.	As per the Public Information Centre (PIC) on June 21st, 2023, the projected maximum day water demand required to support 2051 flow demands is approximately 6,214 m3/day. Additional hydrogeological studies which will be completed in the future to confirm what is the sustainable capacity of the existing municipal well field and of other possible groundwater sources. These reports may answer this question and can be available to the public/upon request once completed.	Water Supply
6	What monitoring protocol will be in place to measure drawdown on the private wells? What contingency plans are in place if mitigation is required due to reduced or lack of water supply?	The Golder report speculated the aquifer may extend as far south as Carveth Drive. According the MOECC well map data there are at least 12 private wells that tap into the same aquifer.	As per the Public Information Centre (PIC) on June 21st, 2023, a future hydrogeological investigation will be completed to confirm water quantity and quality for future capacity. The hydrogeological investigation will consider impacts to nearby wells by taking baseline measurements and monitoring the draw down during the pump test of the test well. However, this pertains only to the private well owner(s) nearby who wish to participate. The pump tests are gradual tests for a short period of time, during which the hydrogeological team is on site monitoring the progress. Should they encounter significant draw down or impacts to the well(s), they will stop the pump test and take appropriate action. Upon completion, the hydrogeological report and findings may be in a better position to answer this question. Based on information available to date, the recommended water supply solutions are as indicated in the PIC on June 21st, 2023. However, should the findings of the future hydrogeological investigations identify that certain solutions are no longer feasible, then the evaluation of water supply alternatives will be revisited.	Hydrogeological Studies & Aquifer Conditions
7	Has the stability of the aquifer been measured or considered? Could the aquifer collapse?	Drawdown may be a critical factor in the stability of slopes that are initially partially or totally submerged. The reduction of the water level has two effects: reduction of the stabilizing external hydrostatic pressure due to the unloading effect of removing water, and modification of the internal pore water pressure.	As per the Public Information Centre (PIC) on June 21st, 2023, a future hydrogeological investigation will be completed to confirm water quantity and quality, including what is a sustainable yield. Upon completion, the hydrogeological report may answer this question. Please also refer to the answer for question #6.	Hydrogeological Studies & Aquifer Conditions
8	What is the annual current and historic recharge rate of the Millbrook aquifer? How will the cumulative impervious coverage impact the recharge rate of the Millbrook aquifer?	The Millbrook wells are within a significant recharge zone. According to Trent Source Protection impervious coverage within the Millbrook wellhead protection zone currently is between 1 and 8 %. Reports supporting the Turner application (15T-19002) for 85 residential units to be constructed within the wellhead zone indicate impervious coverage will be 29%. The various approved and expected subdivisions will also increase impervious coverage.	As per the Public Information Centre (PIC) on June 21st, 2023, a future hydrogeological investigation will be completed to confirm water quantity and quality, including what is a sustainable yield. The hydrogeological investigation will consider impacts to nearby wells. Upon completion, the hydrogeological report may answer the question regarding the recharge rate. Based on the Wellhead Protection Area (WHPA) figure provided by Trent Source Protection and Otonabee River Conservation Authority (https://trentsourceprotection.on.ca/images/pdfs/our-watersheds/otonabee-peterborough/Millbrook.pdf) the Turner application is only a small portion of this WHPA. A sizeable portion of the WHPA is in the Oak Ridges Moraine, and as such decisions made under the Planning Act and the Condominium Act must conform with the Oak Ridges Moraine Conservation Plan. That said, based on the 2022 GHD report, the municipal wells draw from the Layer 3 (deepest layer) of the aquifer, which is separated from Layer 1 (uppermost layer) by Layer 2 which is an aquitard (restricting the movement of water between Layer 1 to Layer 3). As such, the imperviousness of the subdivision in the area may impact Layer 1, but is not as likely to impact Layer 3 since the water movement does not pass between the 2 layers due to the aquitard layer. Township will be considering that as part of the subdivision applications within that recharge area, as required under the Source Water Protection Act. Township has requested for information for impacts to recharge area to the subdivision applications for those areas. Township has asked for pre-to-post development for stormwater and also water balance for the aquifer recharge. Please also refer to the answer for question #6 and 7.	Hydrogeological Studies & Aquifer Conditions

#	COMMENT	SUPPLEMENTAL INFORMATION	RESPONSE	CATEGORY
9	How will overall prevailing drier and hotter conditions caused by a quickly changing climate factor into future servicing models?	According to the 2018 MNRF report, there is "A significant decreasing trend of ≈-9 mm or -6.4% per decade was observed in the water year maximum SWE(snow water equivalent) for the province . Trends for the secondary watersheds showed that i) negative trends dominate (78%); ii) no positive trends were significant; and iii) several watersheds had negative trends at the 90 and 95% confidence level" Modelling work, published by the Ministry of Natural Resources (MNR) in 2007, predicted that by mid-century much of southern Ontario will receive 10 to 20 per cent less precipitation and will experience considerable warming (of two degrees Celsius or more) during the warm season. "These changes indicate that the risk of summer droughts will increase over the coming years. The agriculture, forestry and fisheries sectors will face major resource management challenges in adapting to these environmental shifts."	As per the Public Information Centre (PIC) on June 21st, 2023, a future hydrogeological investigation will be completed to confirm water quantity and quality, including how Climate Change may impact future conditions. A hydrogeological work plan is currently being developed to inform the investigation; this work plan is being developed outside of the MSS. The work plan will address concerns related to climate change and propose their incorporation into the hydrogeological investigation. The hydrogeological investigation will then inform further Class Environmental Assessment (EA) studies for future servicing models. The findings of the future hydrogeological study will be available to the public/upon request. Since climate change could impact the groundwater supply and aquifer in different ways, the evaluation table for the water supply considered having groundwater wells in different aquifers an advantage in case one aquifer is more impacted than another. In addition, the firm capacity of the system (with the largest well out of service) will be considered in the future Class EA and design of additional water supply.	Climate Change/Sustainability
10	Has a GUDI investigation been undertaken?	In 2009, the hydraulic connection of the aquifer to Baxter Creek was confirmed by hydrogeologists Dr. David Sharpe and Dr. Marc Hinton from the Geological Survey of Canada. In 2009 it was also confirmed the proposed increase in water taking from the Millbrook wells for a proposed pipeline to service residential/commercial developments in Millbrook and Kawartha Downs could impact the flow levels of Baxter Creek, by these hydrogeologists who both spent several years mapping the watershed of the Oak Ridges Moraine. In their words: "Environment Canada measurements of stream discharge in Baxter Creek at Millbrook show that sustained baseflow is high (almost 500 L/s). Therefore, Baxter creek and the valley aquifer are hydraulically connected and are effectively a common water resource. Additional pumping would probably remove groundwater that would otherwise discharge to the creek. Second, additional drawdown of water levels would likely occur in the vicinity of the pumping wells but the spatial extent of drawdown would be limited by Baxter creek which appears likely to be connected to the aquifer. …..A precautionary approach would consider the potential for contamination based on land uses or previous contamination within the enlarged contributing areas to the wells". Furthermore, in the journal Geoscience Canada, Volume 29, Number 1, March 2002, Dr. David Sharpe states in his study of the Oak Ridges Moraine watershed: "The hydrogeological framework of the Oak Ridges Moraine is more complex than previously recognized…. Regional understanding of groundwater flow systems is increasingly necessary in the Greater Toronto Area and other areas of Canada, to address the growing significance and scope of water-related issues". This paper goes on to state that "pumping of lower sediment or channel aquifers can change vertical hydraulic gradients and flow directions". The Millbrook wells are located in a channel aquifer. The paper relates evidenced and real possibilities of channel breaching and as such, "the presence of a breaching channel could influence the local fluxes and directions of groundwater flow and ultimately the nature and scale of potential impacts". Hydrologist Mark Peacock from the Ganaraska Region Conservation Authority indicated since Baxter Creek and the Millbrook wells are hydraulically connected that a Groundwater Under Direct Influence (GUDI) investigation should be undertaken There are also numerous artesian springs and some residents rely on artesian wells. A reduction in the piezometric water level can result in the artesian spring/well to stop flowing or flow at reduced pressures. Many people rely on the artesian	As per the Public Information Centre (PIC) on June 21st, 2023, a future hydrogeological investigation will occur to confirm water quantity and quality, and whether or not the new well is "GUDI" or "non-GUDI", therefore this will be undertaken during the hydrogeological investigation. Based on the MECP's Drinking Water Works Permit, the existing municipal wells are not deemed as GUDI. Please also refer to the answer for question #6.	Hydrogeological Studies & Aquifer Conditions
11	Will there be studies investigating the drawdown and its impact on surrounding surface and groundwater? What guarantees are in place the drawdown will not impact artesian springs/wells?		Yes, hydrogeological studies will occur. As per the Public Information Centre (PIC) on June 21st, 2023, a future hydrogeological investigation will occur to confirm water quantity and quality, as well as consideration of potential impacts to nearby wells. Upon completion the hydrogeological report may answer this question. As of currently, a hydrogeological work plan is being prepared to inform the hydrogeological investigation. Please also refer to the answer for question #6.	Hydrogeological Studies & Aquifer Conditions

#	COMMENT	SUPPLEMENTAL INFORMATION	RESPONSE	CATEGORY
12	Wouldn't completing a requisite watershed plan and water budget first before any future development is permitted then provide a measure of water safety and security and sustainability?	In 2009 six hydrogeologists/hydrologists - Dr. Alphonso Rivera, Chief Hydrogeologist, Geological Survey of Canada; Dr. David Sharpe, Geological Survey of Canada; Dr. Marc Hinton, Geological Survey of Canada, Dr. Jim Buttle, Trent University; David Webster, Ministry of Natural Resources, and Mark Peacock, Ganaraska Regional Conservation Authority all stated that a watershed plan and water budget should be completed first. "I could only recommend to you that you request a hydrogeological study of your area in order to quantify the sustainable yields and rates of the wells and of the aquifer as an ensemble." – Dr. Alphonso Rivera, Geological Survey of Canada In 2018, the Government of Ontario also recognized the importance of Watershed Planning. Watershed Planning in Ontario (gov.on.ca) Two of the Millbrook wells are located within the Oak Ridges Moraine. According to the ORMCP 2001 and 2017, a watershed plan and water budget needs to be completed. To date, this has not been completed. In 2022, the County of Peterborough voted to include in its budget' 'future use to fund a watershed or subwatershed study' for the entire region, but to date, that has not been undertaken. ORMCP - Watershed plans 24. (1) Every upper-tier municipality and single-tier municipality shall have a watershed plan that meets the requirements of subsection (3) for every watershed whose streams originate within the municipality's area of jurisdiction. (2) The objectives and requirements of each watershed plan shall be incorporated into the municipality's official plan. (3) A watershed plan shall include, as a minimum, (a) a water budget and a water conservation plan as set out in section 25; (b) land and water use and management strategies; (c) a framework for implementation, which may include more detailed implementation plans for smaller geographic areas, such as subwatershed plans, or for specific subject matter, such as environmental management plans; (d) an environmental monitoring plan based on a minimum of five years of monitoring; (e) provisions requiring the use of environmental management practices and programs, such as programs to prevent pollution, reduce the use of pesticides and manage the use of road salt; (f) criteria for evaluating the protection of water quality and quantity, hydrological features and functions, including criteria for evaluating the impacts of proposed development and infrastructure projects within and outside the Plan Area on water quality and quantity and	As per the Public Information Centre (PIC) on June 21st, 2023, a series of investigations including hydrogeological studies will occur after the conclusion of the current MSS project. The hydrogeological study in particular may provide answers to these questions and clearer findings on the impacts of development on the local watershed features. The findings will be compiled in a hydrogeological report and once complete, can be provided upon request. The new developments within the Township of Cavan Monaghan were mandated by the Province of Ontario and outside of the Township's control. Development requirements are determined by Planning Act and associated Minister's Zoning Orders (MZO's) which bypass the local re-zoning process. The Township was mandated to comply with the new growth allocations. The City of Peterborough has been undertaking a watershed plan which includes some parts of the Township of Cavan Monaghan. The final report and presentation is planned for 2023. The findings from this watershed plan may help with the future Class EAs and design projects related to water supply.	Hydrogeological Studies & Aquifer Conditions
13	What is the status of ongoing monitoring including soil vapour testing results?	The Millbrook jail lands have been found to be contaminated with several toxic elements but the one of most concern is tetrachloroethylene (PCE). The latest report "indicated the direction of groundwater flow in Layer 3 is towards the Southeast (Feb. 2021 data) the location of the Millbrook Municipal Supply Wells. Infrastructure Ontario (IO) provided an Annual Monitoring Report for the lands from 2020-2021 (GHD, 2021) though, unlike previous years, it does not include any recommendations or future work plans. IO was contacted to determine the scope of work for the remainder of 2021 and 2022 or beyond , as well as clarification regarding the lack of data or discussions regarding the soil vapour analyses from 2020 and early 2021, no response has been received to date." (Council meeting report Nov. 15, 2021)	A report studying the groundwater on the Millbrook Correctional Facility property was completed in 2022 (GHD, 2022). As per the findings of the report, PCE was most not detected in groundwater samples in the Millbrook Correctional Facility property, and where it was detected, it was at concentrations less than the 1.6 µg/L standard. There have been no detections of PCE in the Millbrook municipal well to date. Township staff are currently working with the MECP and Infrastructure Ontario to determine future monitoring plans. The Township, MECP and Infrastructure Ontario are working to verify that there are no negative impacts to the Millbrook wellfield.	IO Lands
14	What impact could the drawdown have on possible contamination – will this be investigated?	The same report to council concluded that the confining Layer 2, the aquitard between Layer 1 and Layer 3 is currently restricting the movement of water and contaminants between Layer 1 and Layer 3. However, no confined aquifer is immune to contamination.	Please refer to the answer for question #13.	IO Lands

#	COMMENT	SUPPLEMENTAL INFORMATION	RESPONSE	CATEGORY
15	Have the combined requirements of Kawartha Downs and Millbrook been investigated?	Two of the slides in the recent Anderson report suggest the wells at 1256 Syer Line Cavan Monaghan purchased years ago be looked at as a future servicing possibility for Millbrook. However, Kawartha Downs also has the expectation to use the Syer Line well. Property almost due north at 1277 Moore Drive (the former Cavan Springs bottled water plant) has also been purchased for their water supply for their huge residential/commercial complex. "The proponents for the site development have purchased a property on Moore Road abutting the Syer Line property. This site is provided with wells that are expected to provide similar water quality to that of the Syer Line wells, with potentially higher yield. …This supply source is presently undergoing yield tests to determine the safe rate of supply." This supply may be connected to the proposed future municipal supply from the Syer Line site to ensure a long-term, stable potable water source for the municipal development area and adjoining employment lands." – 2022 Clearford report There is also the nearby industrial complex approved for 1066 Syer Line with its proposed 620,000 sq. ft cannabis facility which will require at least 60,000 litres of water daily. In a hydrogeological assessment conducted by Cambium October 15 2021 for the property at 1066 Syer Line, however, it stated: "In summary, there is ample proven supply for industrial uses that do not require process or washing water across the site. There is an indicated additional and isolated supply potential from the upper unit which could support either non-process water industrial development, or industrial uses that require process water up to ~144,000L/day. Cambium recommends a further testing program to provide proven water quality and quantity from the upper unconfined aquifer as well as the occurrence of the upper unconfined aquifer across the site. " It should also be noted that a consultant report presented in June 2009 indicated the well located on 1277 Moore Drive was deemed unsuitable as potential municipal water supply due to possible site contamination from historic uses. There was a temporary asphalt production plant on site in 2003. In a report prepared by Meridian Consultants entitled Fraserville Secondary Plan Update Background report finalized on June 10, 2009 it states on page 7 in section 3.2 Water Supply: "Test results on the preferred site indicated a concern of possible site contamination. The contamination stems from historic uses of the lands." The MOECC well records for 1277 Moore Drive and 1256 Syer Line are almost exactly at the same depth – as are other nearby private wells… so this suggests these wells are all within the same aquifer.	Kawartha Downs is outside of the service area boundaries concerning this Master Servicing Study (MSS). The requirements for the Millbrook area are being studied as part of the MSS. The projected requirements for Millbrook were discussed at the Public Information Centre (PIC) which occurred on June 21st, 2023, and more detailed information on development in Millbrook will be available to the public when the MSS is published. Township has secured a property on King St. for possible future well (for further hydrogeological investigation), and the Township owns property on Syer Line. So there are several options for the future test well and hydrogeological investigations. These will be considered further in the future Water Supply Class EA, after the MSS. It would be beneficial to the Township if the Millbrook wells are supplied by 2 different aquifers (this allows for not just well redundancy but aquifer redundancy as well). The industrial complex at 1066 Syer Line is not anticipated to require 60,000L of water/day as result of changes in the proposed users.	Population
16	Has there been a groundwater impact study on the surrounding area? Is there a water quality report for 1256 Syer Line?		As per the Public Information Centre on June 21st, 2023, a future hydrogeological study will occur to determine groundwater quantity and quality and confirm groundwater impacts. Upon completion, the hydrogeological report may answer this question. A hydrogeological work plan is currently being prepared to inform the requirements of the hydrogeological study; the work plan is being completed outside of the MSS. This work plan will determine if the well at 1256 Syer Line will be included in the study. Please also refer to the answer for question #6. During the future Water Supply Class EA and the hydrogeological investigations, the water quality testing will be undertaken to further consider the possibility of using the wells on 1256 Syer Line.	Hydrogeological Studies & Aquifer Conditions
17	Has an Environmental Impact Study been conducted on the combined usage of the two wells Moore and Syer Line (as well as the well located at 1066 Syer Line)?		Please also refer to the answers for question #6 and question #16.	Hydrogeological Studies & Aquifer Conditions

#	COMMENT	SUPPLEMENTAL INFORMATION	RESPONSE	CATEGORY
18	Is this correct? Will any further development be frozen until wastewater system upgrades can be completed? What about any commercial/employment developments? How can they be accommodated if servicing has already reached capacity?	Cambium conducted a Municipal Allocation Study for the Township –Cambium Allocation Study 2018-07-11.It stated in part "through this assessment it is apparent that the wastewater collection and treatment system is the most limiting factor of future growth under the current regulatory limits." It further stated "from our review of all the applicable information the reserve capacity is equal to 1625 single residential units up to 4 bedrooms. "Section 7.8.1 of the Official Plan states: "When considering allocation of capacity, Council shall maintain a 20 percent reserve of available capacity for non-residential uses". The R.V. Anderson report of April 3 2023 indicated that there are 1626 approvals and applications in process. If one takes into consideration the 20% reserve this would lower the number 1300. In the Cambium Water and Wastewater Allocation Assessment 2020-03-05 it states that by using Ontario's procedure D-5-1 which is a conservative estimate and by modifying the inputs to the calculation assuming water efficient fixtures and tighter sewers, the reserve capacity is estimated at 1800 units. However if one deducts the 20% (360 units) the resulting 1440 unit capacity has already been exceeded by those applications and approvals. The July 9 2018 Millbrook Monitoring Study by Cambium mandate was "to monitor sewage flows as the plant capacity was affected by ingress of water into the collection systems through storm runoff inflow and or groundwater infiltration with the latter encompassing non-compliant discharges of foundation drain water to the Town's combined sewers ". The Cambium report of 2020-03-05 Water and Wastewater Allocation Assessment for Millbrook stated the ERU of 1173 committed and 452 uncommitted reserves. The committed reserve includes Towerhill South Towerhill North and Nina Court. Township staff confirmed that there would be no further projects approved until the MSS is completed by RV Anderson. According to the R.V. Anderson report with time-frames for upgrades etc. for short term and long term servicing it would appear that no further development can take place until at least 2029.	As per the April 3, 2023 Council Presentation, the Millbrook WWTP is only using about 50% of its rated peak capacity of 8,242 m3. Based on current projections, the wastewater treatment plant (WWTP) is projected to reach 85% of its current rated peak capacity by approximately 2029, depending on the pace of growth and development. The Township should undertake the design and construction of the WWTP expansion no later than when 85% of the WWTP's rated capacity is achieved in order to avoid postponing the ability to service future developments. Additionally, next steps for the Master Servicing Study for future development in the Township of Cavan Monaghan include further Class Environmental Assessment (EA) studies to confirm the requirements of the wastewater system upgrades and projected timeline for design/construction.	Wastewater
19	Are effluent levels in Baxter Creek presently within that 0.1mg of phosphorus loading?	The Bay of Quinte Remedial Action Plan June 2022 report states: • Reduce sewage treatment plant and industrial wastewater treatment plant based point source phosphorus loadings by an average of 60%, based on current Environmental Compliance Approval approved limits and no net increase in loadings into the future. This can be accomplished through maintaining a phosphorus effluent limit of 0.1 mg Total Phosphorus/L design objective for all sewage treatment plants and industrial dischargers in the Bay of Quinte watershed Sewage treatment plants and industrial wastewater treatment plants that boarder the Bay are generally well positioned to reduce phosphorus loads and plan for future development and climate change. However, some plants on tributaries up the watershed are struggling to meet current effluent objectives and will be targeted in the initial implementation phase of the plan. As a general rule, Ontario wastewater treatment plant effluent must not exceed a monthly average concentration of one milligram per litre (mg/L) of phosphorus. For some plants, the province sets more stringent effluent limits, as low as 0.02 mg/L, depending on the receiving water body, watershed-specific regulations or policies, and the municipality's ability to fund the necessary treatment technologies.	The current Environmental Compliance Approval (ECA) in place for the Millbrook Wastewater Treatment Plant (WWTP) requires the WWTP to not exceed 0.1 mg/L total phosphorous concentrations in the effluent discharge. Samples to confirm these levels are required to be collected weekly and the WWTP must report on process, effluent levels, and operational performance annually. Based on the most recent annual report the Millbrook WWTP's effluent has not exceeded on the total phosphorous concentration.	Effluent Levels
20	Will the phosphorus effluent limit in Baxter Creek be maintained for the cumulative development applications in Millbrook as well as the Kawartha Downs development in Fraserville? If so, how will this be accomplished? How will it be monitored?		Millbrook Wastewater Treatment Plant (WWTP) currently has a phosphorous effluent limit of 0.1mg/L. This limit is matched to the Quinte Remedial Action Plan (RAP). Ultimately it will be up to the Ministry of Environment, Conservation and Parks (MECP) and Quinte RAP committee to determine phosphorous limits. In support of the Millbrook WWTP expansion, the Township is conducting an Assimilative Capacity Study (ACS) which will include sampling. The ACS will be utilized to inform MECP decision making on effluent criteria and will be confirmed by an Environmental Compliance Approval (ECA). The effluent phosphorous levels will continue to be monitored and reported to the MECP as a requirement of the ECA. Unfortunately, the Township cannot comment on Kawartha Downs or other development applications outside the current and future Millbrook Urban Settlement area as they are not/will not be serviced by the Millbrook WWTP. Each WWTP will need to go through its own MECP approval process for determining the allowed effluent criteria and flows, based on the findings from its own assimilative capacity study to a specific receiver. Please also refer to the answer for question #19 and 37.	Effluent Levels

#	COMMENT	SUPPLEMENTAL INFORMATION	RESPONSE	CATEGORY
21	Does CM have the ability to fund the necessary treatment technologies?		A future schedule C Class Environmental Assessment (EA) will be completed to determine required treatment technologies and the associated capital costs. This future Class EA will also be informed by an ongoing Assimilative Capacity Study (ACS) and input from the Ministry of Environment, Conservation and Parks (MECP), that will advise what level of treatment will be required. At the moment there are several tertiary treatment technology options and the factors that may go into determining which one to use includes ability to meet the required effluent criteria, footprint, cost, reliability, compatibility with existing WWTP, O&M efforts etc. The MSS provides the Township with a timeline and cost estimate for these future improvement projects so that they can plan ahead for the cash flows needed. It is the intent that the WWTP Expansion will be paid for by the development charges and the Township has set aside an amount for the water/wastewater improvements. The Township will not be proceeding with the project unless there is financial capability to fund it.	Effluent Levels
22	What is the mitigation plan if phosphorus loading levels exceed provincial levels?		As per the Public Information Centre (PIC) on June 21st, 2023, an Assimilative Capacity Study (ACS) on Baxter Creek is currently ongoing. The associated ACS report may include an answer to this question and can be provided upon completion as part of the documentation in the future Class EAs. The Ministry of Environment, Conservation and Parks (MECP) will inform effluent criteria based on the ACS and Environmental Compliance Approval (ECA). The MECP will only provide effluent levels that are achievable with available current technology. The current ECA requires the Wastewater Treatment Plant (WWTP) to collect samples for Total Phosphorous weekly, and annual reports on the operation of the WWTP are required. This allows the Township to monitor and confirm that the Total Phosphorous levels remain within the levels set out by the MECP. Should the Total Phosphorus levels start to increase and progressively get closer to the limit, the Township will consider if higher levels of technology or optimization to the WWTP is required. Please also refer to the answer for question #19.	Effluent Levels
23	Will there be an Environmental Impact Study (EIS) that will investigate the cumulative impact of stormwater management plans and lower levels in Baxter Creek will have on trout populations?	The Fallis West and Turner development applications call for several stormwater ponds that will overflow into Baxter Creek. According to the local chapter of Trout Unlimited, Baxter Creek has one of the finest coldwater trout streams. Trout species are dependent on specific temperatures to ensure the survival of populations. Trout species require very specific water temperatures to spawn and to ensure their sustainability Trout Unlimited has noted an increase in temperature being caused by the stormwater outflow of the newly constructed Towerhill South/Highlands subdivision. Trout Unlimited has completed additional and recent studies that raise multiple concerns about increasing water temperatures of Baxter Creek. In addition, lower levels in Baxter Creek and its tributaries also could mean a water temperature increase which, according to Les Stanfield of the Glenora Fish Research Station would have a negative impact on trout spawning grounds.	As per the Public Information Centre (PIC) which occurred on June 21st, 2023, further natural environment investigations will occur in future project and site specific Class EAs to confirm conditions and impacts for servicing upgrades in the Township of Cavan Monaghan. Upon completion, these reports may answer these questions. Currently, in Fall 2023 and Winter 2024, a Benthic survey (outside of the MSS) is being completed to assess aspects of the health of Baxter Creek. This study will support the Assimilative Capacity Study (ACS) (which will be considering temperature as a parameter) and both will inform Ministry of Environment, Conservation and Parks (MECP) on what would be acceptable effluent criteria to suit Baxter Creek. The stormwater management strategies for subdivisions come in as a report to the Township, which get reviewed by the Township, ORCA and even the County of Peterborough. It will be independently approved for each development and is not related to the WWTP approval process. Ultimately, Stormwater management is not within the scope of this MSS.	Stormwater Management
24	How much effluent will be discharged on a daily basis into the south stormwater pond?	The developer of the CSU residential application has indicated that: "We confirm the intent is to have the wastewater treatment plant drain to the SWM pond. The design will be refined at detailed design once the final design of the wastewater treatment plant is available" The functional servicing report indicates the drainage area for the south SWM pond is 10.81 ha. The pond itself will encompass 1.285 ha.	As per the MSS, the preferred alternative is to expand the existing Millbrook WWTP rather than have a separate new WWTP that discharges to the stormwater pond. It is possible for the public to participate in the review of the planning process in the CSU development application.	Stormwater Management
25	Will the SWM pond be able to handle both stormwater and wastewater discharge?	In regards to the CSU development which includes a Stormwater Management (SWM) pond, and the associated effects of the CSU development. Also discussed in question 24.	Refer to answer from question #24	Stormwater Management
26	Is there a contingency plan for excess overflow caused by either climatic, mechanical, or other conditions?	In regards to the CSU development which includes a Stormwater Management (SWM) pond, and the associated effects of the CSU development. Also discussed in questions 24 and 25.	The analysis of the stormwater management of a specific future development is not in the scope of this Water and Wastewater Master Servicing Study. Refer to answer from question #24.	Stormwater Management

#	COMMENT	SUPPLEMENTAL INFORMATION	RESPONSE	CATEGORY
27	What is the setback for the SWP from residential developments – both existing and proposed?	Wastewater plants emit odours that are offensive and often intolerable. Weather conditions can intensify odours. Temperature inversions, wind velocity, and wind direction contribute to how far odour emissions drift. Odours are worse at higher temperatures – like the summer when people are often engage in outdoor activities. There are no setbacks from either the proposed residential development or the existing subdivision listed in the CSU diagrams for the proposed wastewater treatment plant and the stormwater pond.	Refer to answer #24 and #36.	Stormwater Management
28	What measures will be in place to control odours?	In regards to the CSU development which includes a Stormwater Management (SWM) pond, and the associated effects of the CSU development. Also discussed in questions 24 - 27.	Relevant odour control measures will be further explored during the Millbrook WWTP Expansion Schedule C Class EA and detailed design that will follow this MSS.	Stormwater Management
29	How effective will those controls be since it is hard to imagine that effluent discharged into a SWM pond will be odour-free? (SWM ponds often are stagnant).	In regards to the CSU development which includes a Stormwater Management (SWM) pond, and the associated effects of the CSU development. Also discussed in questions 24 - 28.	Refer to answer #28.	Stormwater Management
30	Is there a contingency plan if the odour controls are ineffective?	In regards to the CSU development which includes a Stormwater Management (SWM) pond, and the associated effects of the CSU development. Also discussed in questions 24 - 29.	Refer to answer #28.	Stormwater Management
31	What will the cumulative phosphorus loading be?	Peel residents to pay $9.5M for odour mitigation at Mississauga wastewater plant next to giant lakefront development | The Pointer There are proposals for two additional wastewater treatment plants – one in Millbrook (CSU) and one in Fraserville (Kawartha Downs). The Millbrook WWTP is at capacity and will have to be expanded. The effluent from all 3 plants will ultimately discharge into the Otonabee River into Rice Lake then into the Trent River to the Bay of Quinte and Lake Ontario. " In Ontario, the largest tributary sources of Tributary Phosphorus were from the Trent River (200 mT/year), the Humber River (93.0 mT/year), and the Welland Canal (80.8 mT/year)." (PDF) Tributary phosphorus loading to Lake Ontario (researchgate.net) The City of Peterborough Watershed Planning Study Water Quality Modeling Report April 2021 notes that phosphorus levels in the Otonabee River are already excessive at times: Water quality monitoring results from the PWQMN indicate that in general, concentrations for all water quality parameters of interest inside the Otonabee River are within the accepted thresholds defined by the PWQO and CWQG. However, in some instances, concentrations of Copper, Total Phosphorus and Zinc have been observed to exceed the targeted thresholds, making the effective treatment of these water quality constituents a priority for future water quality initiatives. Millbrook wastewater treatment plants discharges into Baxter Creek which ultimately ends up discharging into the Otonabee River. The CSU (Fallis West & East) proposals propose a wastewater treatment plant that will first discharge into a stormwater pond, then into Baxter Creek. The Kawartha Downs development proposes 3 possible discharge points, the Otonabee River, Cavan Creek a tributary to the Otonabee River and the Cavan wetland. "All three potential receivers outlet to Rice Lake, with both Cavan Creek and the wetland complex discharging to the Otonabee River as an intermediate receiver." Phosphorus loads can also fluctuate over time due to constantly changing factors such as weather. Aside from wastewater discharge, phosphorus is transported into waterways during rainfall and snowmelt event, so an increased water flow will result in an increased phosphorus load level. Even if the phosphorus concentration level is low in a	Please refer to the answers for question #19 and question #20.	Effluent Levels
32	Will climate change (increased intense rainfall events) be factored in?		As per the Public Information Centre (PIC) which occurred on June 21st, 2023, further natural environment investigations will occur to confirm conditions for servicing upgrades in the Township of Cavan Monaghan. Upon completion, these reports may answer these questions. Regarding climate change, shortlisted alternatives in the MSS will be evaluated using several evaluation criteria, including environmental criterion, where climate change is a key factor. The sanitary model work for the wastewater conveyance has taken into account infiltration and inflow (I&I) so that the sizing of the sanitary sewers would account for high precipitation events. The wastewater flow forecasts have also taken I&I into account. Further detailed calculations will need to be undertaken during the Wastewater Treatment Schedule C Class EA and the detailed design. Please refer to the answer for question #9 as well.	Climate Change/Sustainability

#	COMMENT	SUPPLEMENTAL INFORMATION	RESPONSE	CATEGORY
33	Will the loading levels comply with Bay of Quinte Remedial Action Plan (BQRAP) and specifically the Phosphorus Management Plan which aims to maintain the TP limit for WWTPs discharging to the watershed at 0.1 mg/l? (Reports for the Kawartha Downs development have indicated the 200 unit hotel is currently excluded from TP levels). If MEPC agrees to raise the restrictions levels, doesn't this set a dangerous precedent not only locally, but province-wide?	One of the possible options discussed at the Public Information meeting is that the loading restrictions might be raised by the MEPC.	As per the Public Information Centre on June 21st, 2023, an Assimilative Capacity Study (ACS) is currently ongoing. Development plans are recommended to be informed by the findings of this MSS and the ACS (undertaken in parallel but outside of the MSS) to allow for responsible planning. Report documentation from the ACS may answer this question and can be provided upon completion. Members of the Master Servicing Study (MSS) team have met with the Ministry of Environment, Conservation and Parks (MECP) to discuss phosphorous levels regarding higher than initially expected development levels. The conclusion of these conversations was that the MECP can only expect the future WWTP expansions (and/or new WWTP) to use the best available technologies for phosphorous reduction. The MECP will look at each WWTP application separately and with the whole Bay of Quinte in mind, but will not penalize the Township and Millbrook on their ability to grow just because the MZOs in nearby areas were imposed on the Township. In addition, since the WWTPs are not the only source of phosphorus, the overall approach should be a reduction of phosphorus loading from all sources, not just the WWTP effluent.	Effluent Levels
34	Will Rice Lake residents, and community associations be consulted about any changes to permitted phosphorus loading levels?		The future Millbrook WWTP Expansion Class Environmental Assessment will include public consultation and engagement. Parties interested in receiving information can contact the Township at any time and have themselves added to the contact list to receive all future communications. Interested public can provide questions and comments during future Class EAs.	Engagement
35	At the public meeting it was noted that there are 32 large-scale wastewater systems that discharge into the Otonabee/RiceLake/Trent River system – all that then could also seek an increase in allowable TP discharge levels. The wastewater capacity for the City of Peterborough is also at capacity. If TP discharge restrictions are raised for Millbrook, would it not seem reasonable for the City of Peterborough to also ask for the same?		The current Environmental Compliance Approval (ECA) and the Quinte Remedial Action Plan (RAP) both expect the concentration of phosphorous to be 0.1mg/L. Calculations will be reviewed and reconfirmed by the future Class C Environmental Assessment for the WWTP, the ongoing Assimilative Capacity Study (ACS) of Baxter Creek, the ECA and further conversations with the MECP.	Effluent Levels
36	It appears the proposed CSU wastewater treatment plant and its capacity has been excluded? If so, why has it been excluded?	The storyboards map with the Millbrook settlement area includes the CSU residential development which includes a proposal to construct a separate wastewater treatment plant. However, there is no mention of this wastewater treatment plant in the presentation boards that only recommend expansion of the existing wastewater facility in Millbrook.	The CSU development application proposed that they could build their own plant if connecting to the Millbrook plant was not viable, further discussions between the developer and the Township will determine if constructing another plant is viable. Refer to response from question #24.	Wastewater
37	Will the loading study presently apparently currently being conducted on Baxter Creek include the anticipated discharge from the CSU development? Will that study be released to the public?		The Assimilative Capacity Study (ACS) is currently being completed, in parallel, but outside of the MSS scope of work. The ACS will advise how much more of certain pollutants the Baxter Creek can assimulate without detrimental impacts. Based on that study's findings (which is not yet available), the future Schedule C Class EA for the WWTP expansion will be able to detetermine how much more flows of a certain effluent quality can be discharged to Baxter Creek. Upon determining how much effluent the Baxter Creek can take, the Township can confirm the wastewater flow allocation going to the expanded Millbrook WWTP. The associated assimilative capacity report may be made available as part of the background documentation to the Schedule C Class EA, at the discretion of the Township and their consultant. The Township and their consultant for the Schedule C Class EA (not yet underway) will be working with the MECP regarding the effluent criteria for the Millbrook WWTP expansion. Please also refer to the answer for question #36.	Wastewater

#	COMMENT	SUPPLEMENTAL INFORMATION	RESPONSE	CATEGORY
38	Will 20% capacity be directed to future commercial/industrial needs? Will it be sufficient to meet both residential and commercial/industrial needs? How will that be determined?	The storyboard recommendation expansion of the existing water treatment plants notes: “Capacity expansion from 8242 m3 /day (existing) to 13,316 m3 /day (year 2051), based on peak flows”. The peak flows are based on primarily residential capacity since Millbrook currently lacks significant commercial and/or industrial facilities. However, the MZO for the Fallis East development includes a large commercial area plus lands designated for future industrial and commercial zoning in the Official Plan.	The MSS used the previously completed Growth Management Strategy (GMS) by Watson and Associates to inform the growth projections and therefore future wastewater demands. The GMS took into account the projected residential, commercial/institutional/industrial needs as well as the MZOs in the future Millbrook Urban Settlement Area. We used the results from the GMS study instead of the Official Plan (OP) since the OP is currently being updated to align with the findings in the GMS. Currently, the GMS is the most up to date and relevant information. The percentage of wastewater capacity has been reserved for commercial/institutional/industrial uses based on the GMS forecasts. Confirmation of the numbers and allocation may be occur during future studies after the conclusion of the Master Servicing Study (MSS), such as during the future Class EA study regarding the wastewater treatment plant expansion. Changes to the needs and forecasts can be taken into account by those future studies.	Wastewater
39	What is the estimated cost of these two facilities?	The proposed recommendations include a new water storage facility and expansion of the Millbrook wastewater treatment plant.	The Project File Report, that will be made available to the public during the 30-day review period, will have a high level estimate on the cost for these facilities. As per the Public Information Centre on June 21st, 2023, there will be further Class Environmental Assessment (EA) studies on each recommended facility that is recommended from this Master Servicing Study (MSS). The future Class EAs will include updated cost estimates as those studies will have more project specific details that are not available during this high level MSS.	Cost
40	What is the anticipated decrease in stormwater and groundwater flow by the implementation of the sump pump disconnection program and how many households will be affected?	On June 26, 2023 CM Council adopted By-Law 2023-48 – an updated Sewer By-law. The report states: “With the Water and Wastewater Master Servicing Study underway, the Township is looking to reduce the unnecessary discharge of stormwater and groundwater from private sump pumps and roof drains in order to provide more treatment capacity, and lower operational costs at the Wastewater Treatment Plant. The Township is planning to introduce a sump pump disconnection program that will include public education and outreach, inspections, and by-law enforcement. Township staff will take inventory of illegal sewer connections and help find alternative solutions for property owners.”filestream.ashx (escribemeetings.com)	Township has recently implemented sewer by-law to include disconnection of sump pumps to the sanitary system, and has an ongoing plan for the next few years to implement such programs. The Township is currently conducting an inventory of illegal sewer connections in the Township and determining alternative solutions for those affected by this by-law. Further questions on this by-law are best directed to the Township as this MSS project, which focuses on water and wastewater servicing, has no affiliation with the Township’s stormwater management and stormwater inventory or alternative assessment as related to this by-law. Should the results be relevant and available in time for the future Millbrook WWTP Expansion Schedule C Class EA, the forecasted flows and capacity calculations can be updated to suit.	Wastewater
41	The second phase of this massive 718 residential unit development is currently under construction but may not be completed by 2024. Wouldn’t it be more accurate and that would endorse the precautionary principle and sustainability to investigate the Millbrook aquifer after this residential development has been completed and inhabited and before any further development can go forward?		Please refer to the answer for question #2 and 6.	Hydrogeological Studies & Aquifer Conditions

#	COMMENT	SUPPLEMENTAL INFORMATION	RESPONSE	CATEGORY
42	The County Official Plan supports the question asked in the first set of questions that were submitted .... Wouldn't completing a requisite watershed plan and water budget first before any future development is permitted then provide a measure of water safety and security and sustainability?	The County of Peterborough just released its approved Official Plan and indicates that 34% of total residential housing has been allocated to Cavan Monaghan with most of that housing directed towards Millbrook. The County Plan states: 9.2 Watershed Planning (page 162-163) The County of Peterborough and local Municipalities are committed to implementing a watershed-based approach to land use planning and water management. Watershed planning and land use planning is undertaken to support a comprehensive, integrated, and long-term approach to the protection, enhancement, or restoration of the quality and quantity of water within a watershed. The integration of watershed and land use planning together can be achieved through a watershed management plan. A watershed management plan is a document which is informed by science and designed to identify water resource systems, and to protect, enhance or restore the quality and quantity of water within a particular watershed. It assumes a broad ecosystem approach to natural resource features that are water-related, provides a comprehensive understanding of ecological form and function within the watershed, provides watershed-wide policy directions, delineates subwatershed planning areas and identifies priorities for further detailed studying. Peterborough County Council has committed to undertake a watershed management plan starting in 2023 in collaboration with local Municipalities and Conservation Authorities, and has allocated funding for this project. When prepared, a watershed plan will provide information and a framework for future land use decisions, and may identify subwatershed areas and water resource systems. This Official Plan may, in turn, be amended to reflect the broad directions, goals and targets established in the watershed plan." The County Plan also states: 9.7 Highly Vulnerable Aquifers and Groundwater Recharge Areas (page 179) Highly vulnerable aquifers and significant groundwater recharge areas cover most of the County and, as such, these areas have not been identified on Schedules to this Plan but are illustrated on maps contained in the Trent Assessment Report. However, impacts of development applications on groundwater will be considered in planning decisions. Where a major development application within these areas could have an effect on the ground water quality or quantity, studies may be required to demonstrate that the quality and quantity of groundwater in these areas and the function of the recharge areas will be protected, improved, or restored. The requirement for, and scope	Please refer to the answers for question #6 and question #12. The GMS and the MSS considers and answers the questions of how much growth is expected and what kind of servicing improvements are needed in order to accommodate such growth. The findings from these studies should be reviewed with consideration of the Watershed Planning Study, ACS, future hydrogeological investigations, and other studies, in order to confirm the appropriate limits of what the environment can allow. As it stands, the County of Peterborough's Watershed Planning Study is still underway.	Hydrogeological Studies & Aquifer Conditions
43	In the interest of sustainability, can restrictions such as only 2 full bathrooms per residential unit be applied and enforced? Can restrictions be imposed on new commercial and/or industrial ventures?	Real estate listings for residences in the new Highlands subdivision indicate that each residence has between 3 and 5 complete bathrooms. The expectation is the 718 residential unit development being constructed will also offer 3 to 5 full bathrooms per unit. The Millbrook Municipal Services Allocation Study Ref. No.: 6677-001 2018-07-11 notes: "It should also be noted that the water consumption records between 2015 and 2017 contained two outliers. In particular, these outliers corresponded to the properties located at 4 Tupper Street, Millbrook, Ontario and the community centre, which represents the existing arena located at 4 Needlers Lane, Millbrook, Ontario. Each of these properties had a water consumption record of approximately 100,000 m3 for the periods between July 1, 2016 to August 31, 2016, and November 1, 2016, to December 31, 2016, respectively. In addition, the Millbrook Bulk Water Filling Station uses approximately 20,000 m 3 of water annually. Although the water consumption records for these periods were eliminated from the general trends displayed in Figure 6 to Figure 8, these spikes in water consumption should also be considered for these properties and any other properties that serve a similar purpose in the future."	In the interest of sustainability, the Township has been undertaking Inflow and Infiltration (I&I) studies, relining and repairing santiary sewers to improve the sanitary sewer system to minimize the effects of high precipitiation events on the wastewater system. The Township had a pilot program to allow residents to change out to low flush toilets. The Ontario Building Code is also trying to improve on their standards for water conservation. As per the Public Information Centre (PIC) on June 21st, 2022, although water conservation efforts cannot be the sole preferred solution to deal with the projected servicing deficit in the Township of Cavan Monaghan, it can be integrated into the preferred solutions for servicing in the Township. As of currently, no decisions have been made for the specific types of conservation efforts that may be used, but examples include water efficient appliances, scheduled lawn watering, water use restrictions during dry seasons.	Climate Change/Sustainability
44	Note: The 20,000 m 3 drawn by the Bulk Filling Station dates to 2016. How much was withdrawn each year from 2017 to 2022? This is a critical outlet for the agricultural community and cannot be decommissioned. Will the annual amount of water withdrawn through the Bulk Filling Station be factored in the amount available for safe and secure water servicing?		The Township will continue to monitor and meter the bulk water usage and will keep that in mind for the forecasted flows to factor into the future Water Supply Class EA. Currently the maximum day demand for the past several years is only 1000m3/day compared to the allowed water taking of 3,000m3/day. So it is within the allowed water taking at the moment.	Water Supply

#	COMMENT	SUPPLEMENTAL INFORMATION	RESPONSE	CATEGORY
45	Now that the Province has changed development charges that will be received by Municipalities will there in fact be sufficient funds to cover the short and long term capital costs? No doubt the 2021 cost estimates will have increased since. What are the estimated costs for short term and long term expansion and upgrades now?	In a report to Council presented by Watson and RVA October 18 2021 it was estimated that: Servicing for short term growth – i.e. 2026 estimated to be" a further 872 units and 1094 employees would require upgrades to the existing facilities including rerating the wwtp to 3,000m3/day upgrades to Tupper St sps booster pumping station capacity with a preliminary cost of $1.4 million SERVICING OF LONG-TERM GROWTH (2041)– anticipated • Servicing for: 3,338 residential units (1,690 additional from 2026 • Required facility WWTP expansion (addition of 3rd train) Potential new SPS for North employment lands Groundwater exploration, WTP expansion (well supply and treatment) o New BPS (depending where growth occurs) o Construction of new 2,115 m3 WST (location dependent on where growth occurs) o These upgrades will require another Class EA prior to design and construction o Total project (engineering + capital) cost estimate of ~$38M (Anticipated to be funded by Development Charges)	As per answer to question #39, the Project File Report, that will be made available to the public during the 30-day review period, will have a high level estimate on the cost for these facilities. Upon completion of the future Class EAs there will be futher updates and refinements to the cost estimates as more of the project specific details are known. Based on the news that we have all been hearing for the past year, there are economic factors that are fluctuating. In addition, supply chain issues, war impacts and skilled labour shortages have all contributed to an increase in construction prices. This is why the MSS is a good tool for the Township to help phase the design and construction of these necessary improvements in order to plan for the cash flow needed. Township plans to pay for this through Development Charges (DC), and there has been efforts from municipalities to reverse the recent changes so that it allows the municipality to pay for this through DC charges.	Cost
46	How will the study take into consideration the additional water and wastewater servicing needs for this policy change? Will any further growth be put on hold until a new official plan has been approved in order to ensure sustainability?	The Ontario "More Homes Built Faster Act" could have a huge impact on the water and wastewater system in our Municipality. Allowing 3 units on a residential lot will result in much greater intensification. In Section 1.4 of the Official Plan it is stated; It is anticipated that the new residential development during the life of this Plan will be distributed throughout the Township as follows: Location Households Millbrook 1,000 *Hamlets 115 *Countryside Areas 240 TOTAL 1,355 * Subject to an appeal with respect to the policies applicable to Special Study Area 1 as identified on Schedule A Once the 718 homes in Towerhill North are built that growth target of the existing Official plan will be met.	As per the Public Information Centre (PIC) on June 21st, 2023, the study was informed by a Growth Management Strategy (GMS) report and associated addendum prepared by Watson & Associates Economists Limited. Please also refer to the answer for question #47 and 38.	Water Supply
47	The Township has in fact achieved its OP sustainability goal now with the Towerhill North in process along with the completion of Towerhill South Coldbrook and intensification. Will any further development be deferred until 2031 until the investigation, design and construction upgrades required have been completed?	Section 2.1.1 of the Official Plan states: that the Township will manage population growth in a sustainable manner. This goal will be achieved by planning for residential growth of approximately sixty five (65) residential units per year to the year 2031, with most directed to the Millbrook urban serviced area. This will be accomplished by ensuring development in the urban area i) is sequential and phased to provide for the continuous and orderly development of the community. ii) is developed to a density that will make economical use of existing infrastructure and services iii) supports intensification and integrates with existing residential areas iv) will not have an adverse effect on the Township's financial situation.	As per the Public Information Centre (PIC) on June 21st, 2023, there are a number of further studies which will be completed to determine growth and implementation. The associated reports may answer this question and will be available to the public/upon request once completed. The Official Plan (OP) is currently being updated to align with the Growth Management Strategy (GMS) prepared by Watson and Associates. As of currently the GMS is the most relevant/accurate growth estimate. The updated County Official Plan is with the Province for approval, and once that is completed, then the Township OP will be amended to match the County OP, so that it is all consistent with the GMS. Please also refer to the answer for question #38.	Population
48	What are the terms of reference for the studies on the Millbrook aquifer?	Last summer, several private wells just outside of Millbrook went dry. Residents in a subdivision in the nearby hamlet of Garden Hill have noted the water quantity of the aquifer that provides a water source for only 50 residential units has decreased significantly and that the water quality has changed requiring expensive filtration systems. Dr. David Sharpe, an expert on the hydrogeology of the Oak Ridges Moraine has noted that even after decades of study, there are still many unknowns.	Please also refer to the answer for question #6.	Hydrogeological Studies & Aquifer Conditions
49	Will the hydrogeological investigation extend beyond the Wellhead Protection Area? Will residents serviced by private wells outside the Wellhead Protection Area be contacted?		The extent of the study area for the purposes of the hydrogeological study are being worked out through a hydrogeological work plan, but this is outside of the scope of the MSS itself. The residents serviced by private wells outside of the Wellhead Protection Area will not be contacted unless they wish to be included in the project stakeholder list for the future Water Supply Class EA. Please also refer to the answer for question #6.	Hydrogeological Studies & Aquifer Conditions
50	(Local water haulers are aware of where area wells have run dry.) There is no identified/described wellhead protection zone for the alternative site 1256 Syer Line. What are the terms of reference for investigation for that well site and aquifer?		The MSS is a high level road map of possible alternatives and then screening for the preferred alternative(s) so that the Township can efficiently and economically investigate further to confirm the solution. Once the MSS is completed and the hydrogeological investigations are undertaken and if it is confirmed that the 1256 Syer Line wells will be part of the preferred solution for the future Millbrook water supply, then groundwater modeling for wellhead protection area delineation and source water protection plan will be completed prior to design and construction. Until the preferred source(s) are narrowed down, it would be too costly and time consuming to try to implement the groundwater modeling and wellhead protection zone delineation for all options. Please also refer to the answer for question #6.	Hydrogeological Studies & Aquifer Conditions

#	COMMENT	SUPPLEMENTAL INFORMATION	RESPONSE	CATEGORY
51	Is there a contingency plan in place, if water security and safety is compromised? If so, what is the contingency plan?		As per the Public Information Centre (PIC) on June 21st, 2023, there are a number of further studies which will be completed to determine impacts, risks, and contingency plans. Those future studies and reports may be better to answer this question. Additionally, the PIC presented the recommendation to the Township to start planning for expansion and improvements when the demands reach 85% of the facility's rated capacity, thereby allowing a 15% buffer to address emergency situations and service deficits.	Water Supply
52	Hiawatha First Nation is located on the shores of Rice Lake (and Cavan Monaghan is located within their lands under the Williams Treaty). Has Hiawatha been consulted about the proposed expanded wastewater plant as well as the other two proposed wastewater treatment plants?	Rural homeowners asked to monitor wells, get water tested as drought conditions continue | CTV News Nobody seems to know why wells are going dry in Clarington | CBC News Drying wells have Halton Hills residents looking for answers - Halton Hills News (haltonhillstoday.ca) No water for nearly 2 months for Muskoka couple after well runs dry (muskokaregion.com) Innisfil wells run dry during drought conditions - Barrie News (barrietoday.com) Dry wells cause for concern in Carlisle (thespec.com) A Low Water Resource for Homeowners with Private Wells — Municipality of Marmora and Lake Where Has All the Water Gone? (friendsofsouthshore.ca) Dried up wells and lack of rainfall spark calls for wider drinking water relief distribution - Halifax | Globalnews.ca Indigenous Consultation The PPS states: The Province's rich cultural diversity is one of its distinctive and defining features. Indigenous communities have a unique relationship with the land and its resources, which continues to shape the history and economy of the Province today. Ontario recognizes the unique role Indigenous communities have in land use planning and development, and the contribution of Indigenous communities' perspectives and traditional knowledge to land use planning decisions. The Province recognizes the importance of consulting with Aboriginal communities on planning matters that may affect their section 35 Aboriginal or treaty rights. Planning authorities are encouraged to build constructive, cooperative relationships through meaningful engagement with Indigenous communities to facilitate knowledge-sharing in land use planning processes and inform decision-making 1.2.2 Planning authorities shall engage with Indigenous communities and coordinate on land use planning matters	The Hiawatha First Nation was included in the project contact list and were sent the Notice of Commencement and Notice of PIC. The project team also contacted them on June 5th, 2023. For future Class Environmental Assessments (EA) related to servicing expansion, the Township can take the MSS project contact list and update them. All future Class EAs will include Indigenous engagement.	Engagement
53	Will Hiawatha First Nation as well Alderville First Nation be consulted on possible changes in allowable phosphorus loading?		Refer to the answer for question #52. Alderville First Nation is also on the project contact list and received the same project notices as Hiawatha First Nation.	Engagement
54	Have all indigenous communities been made aware of the proposals to increase wastewater and stormwater discharge into Baxter Creek – a recognized important coldwater trout stream? Have they been consulted about possible impacts to the fish populations?	The municipality of Cavan Monaghan is included as First Nations lands under Treaty 20, part of the William Treaties. This is a link to the map of fish sanctuaries under Treaty 20 which includes the coldwater trout stream Baxter Creek. https://williamstreatiesfirstnations.ca/wp-content/uploads/2018/05/Treaty-20-Fish-Sanctuaries-Map.pdf	Refer to the answer for question #53. All indigenous communities that were recommended by the MECP to be contacted as part of this MSS are on the project contact list and have been receiving the project notices. Additional investigations will need to be completed during the future project specific Class EAs. During that time, those studies will be better able to answer these questions.	Engagement
55	Will the loading study presently apparently currently being conducted on Baxter Creek include the anticipated discharge from the CSU development and will that study be released to the Indigenous community?		As per the Public Information Centre (PIC) on June 21st, 2023, an Assimilative Capacity Study (ACS) is currently ongoing. Refer to response to question #22.	Engagement

From: [redacted]
Date: July 18, 2023 at 6:49:20 PM EDT
To: Wayne Hancock <whancock@cavanmonaghan.net>, dchehab@rvanderson.com
Subject: Cavan Monaghan MSS PIC
Reply-To: [redacted]

To the Cavan Monaghan Council and MSS Consultants.
I was an attendee Wednesday, June 21, 2023 Open House and would like you to consider my comments as coming from a professional planner and former Member of the Ontario Municipal Board.
The municipality's acceptance of the "Provincial Mandate" of a Village growth rate target of 10,455 in 2051 is a serious lack of governance responsibility. Council is required as the governing body, to "look after the public interest". It is absolutely necessary for a rural community relying on groundwater, to first assess the capacity of the area for the supply, treatment and distribution of water and for the collection, transmission, treatment and disposal of sewage. This work has NOT been undertaken yet (as that is what the MSS is all about), so it is premature to say that Millbrook will have a population of 10,455 and employment of 3,983 in 2051. Until the servicing issues have been fully assessed AND the Jail Lands contamination AND a warming climate impact have been factored in, it is premature to assign a Future Settlement Area Boundary designating lands for future housing. These latter two points, jail land contamination and climate change are critical for the municipality to closely examine and I saw no mention of this at the Public Meeting!

Let's look at the Jail lands first:
Jail Lands Contamination
The jail lands are within the wellhead protection zone and the Millbrook municipal water supply is sourced from a designated 'high vulnerability' aquifer on the Moraine and that the property is located on the ORM. The jail was serviced by a separate well which has now been decommissioned. In 2010, IO conducted an EA Phase 1, which was followed by an EA Phase 2 in 2011. It was a Category B project – (projects classified that have some potential to cause negative environmental effects and require the preparation of a Consultation and Documentation Report (C&D Report). The C & D report found several contaminants – from that report: (APECs) including the Power Plant (APEC D), Former Tire Storage, the Sand Pit (APEC K), Fire Training Tower (APEC J), Former Dumpster Area (APEC L), the Lagoons (APEC M), the Septic Tank and Septic Drainage area, and the Sludge Bed (APEC O).
Contaminants of concern on Site include petroleum hydrocarbons (PHC), xylenes, polycyclic aromatic hydrocarbons (PAHs), naphthalene, lead, polychlorinated biphenyls (PCBs), zinc, cyanide, total chromium, and mercury.
Because the decommissioning was only going to be selective for certain parts of the property , a request for a Part II EA was made for a clean-up of the entire property. That request was denied in 2014 by then MOE Minister Bradley. The Minister indicated in his decision that future owners of the property will be required to remediate the lands including any remaining contaminated lands prior to any future development. In his decision to deny an EA Part II order request for a complete clean-up this was stated:

1. There is no intent to remediate contaminated soils in other Areas of Potential Environmental Concerns.
2. Infrastructure Ontario has informed the Ministry of the Environment that it does not intend to remediate all Areas of Potential Environmental Concern on the Millbrook Correctional Facility.
3. Infrastructure Ontario recognizes that there are contaminated soils on the Project site; however, remediation of contaminated areas was only considered where it overlaps directly with the undertaking or will be impacted by the activities that constitute the undertaking and

thus need to be considered in terms of possible disturbance. The areas of contamination that do not overlap with the Project and are therefore not expected to cause any environmental impacts as a result of the Project, are not being remediated at this time.

4. Remediation would be required in accordance with the Ministry of the Environment standards under Ontario Regulation 153/04 (Records of Site Condition) including any remaining contaminated lands prior to any future development.

The Minister also indicted that as a precaution four monitoring wells would be drilled. Well, those four monitoring wells turned into 14 and to date I think there are over 30. That`s when it was discovered a contaminant, tetrachloroethylene (PCE) not listed in the C & D Report for the EA Phase II was in the ground in several areas and a plume of the contaminant was headed in the direction of the aquifer that supplies Millbrook`s water. According to a former jail guard, barrels of PCE were dumped onto the property on a regular basis for many years. The problem with PCE, is that unlike some other contaminants that might dissipate over time, PCE does not. It can also travel upwards through the soil and into the air.

A July 3rd, 2017 Cavan Council Meeting agenda included a report completed in 2016 by a company BluMetric (retained by IO) on the ongoing groundwater contamination on the site of the former Millbrook Correctional facility. CM Council contracted the company Cambium in 2016 to complete a peer environmental review of Blumetric Environmental 's Additional Deep Aquifer and Source Investigations, IO-RFS-15-080, Site 40-N00596 prepared for Infrastructure Ontario (dated June 28, 2016) regarding the property located at 706 County Road 21, Millbrook Ontario. These are the recommended actions from the peer review.

RECOMMENDED ACTIONS

The recommendations provided below are listed in order of priority sequence.

1. Sample each of the MWF supply wells for the VOC parameters on a monthly basis.

2. It is essential that IO conduct additional on-site delineation in the area between monitoring wells MW6-16 and MW3-14 to identify concentration gradients and characterize the area between the suspected PCE source and the downgradient boundary. It is critical that the source of the PCE impacts be confirmed due to the proximity to the Millbrook MWF.

3. Schedule a meeting with the MOECC in order to review and confirm the work plan moving forward. Including the MOECC as a stakeholder will be critical for both technical and community purposes. As noted in the 2016 BluMetric report, the MOECC previously provided comments on investigative work at the Site and are familiar with this file.

4. Develop a Risk Management Plan (RMP) as a contingency in the event that PCE concentrations are detected in groundwater samples collected from the Millbrook MWF supply wells. Such a plan would include detailed actions in the event specific concentrations are detected. Furthermore, the RMP may include sentinel monitoring wells within the WHPA-A zone of the Millbrook MWF to assess for PCE migration from the Site. The purpose of these installations would be to assess for both current PCE concentrations and potential concentration fluctuations over time, in the event that the PCE plume migrates east / southeast. It is noted that BluMetric estimated the average linear groundwater velocity in Layer 3 to be approximately 4.0 metres per year. Due to the potential issues with insufficient sample volumes and well development with the Solinst CMT well installations, traditional piezometer standpipes should be utilized as part of the delineation work program.

5. If possible, sample the three (3) existing on-site (former correctional facility wells) drinking water supply wells for VOC parameters. In particular, the two (2) wells located in the southeast corner of the Site and installed in the Millbrook MWF aquifer (Layer 3) should be sampled for PCE plume purposes.

6. On- and off-site delineation should be conducted in conjunction with a certified Risk Assessment under Ontario Regulation 153/04, as amended, and may include the collection of soil vapour samples from residential properties along Queen Street and Hunter Street. Data from these investigations should be evaluated by a Risk Assessor.

It is unknown if any of these recommendations have been undertaken. The latest monitoring completed in 2020 included air sampling on the jail lands but air sampling on nearby residential properties

(recommendation # 6) has not been undertaken. In May 2019, an update was presented to Council which included the results of 2018 monitoring tests. That report indicated the PCE plume or plumes had not reached the Millbrook aquifer and there was no contamination of the water supply. In 2019 Infrastructure Ontario (IO) indicated to Council it no longer wanted to monitor the property past 2019 and would release its final report in 2020. That report has not been shared with the public. When asked, IO, responded it would only share that report with the Municipality, the Peterborough Public Health and the Ministry of the Environment, Conservation and Parks. It would be the municipality's decision if they wished to make it public. Council was not happy with the proposal by IO to end its monitoring program and complained to the MOECC, now the MECP. For a while, CM Council agendas under 'ongoing business', Council had been in constant communication with MECP about contamination of the jail lands. That has stopped… but no reason given..
According to the 2021 report, right now it seems, the confined aquitard layer 2 is preventing contamination of the water supply – (an aquitard is a poorly permeable underground layer that limits the flow of groundwater from one aquifer to another) … but will that change with the expected significant drawdown of the wells for the Highlands now only fully occupied and work about to begin on the massive Towerhill North subdivision –they are now grading the property? *An aquitard, also known as a confining bed, is a much less permeable geologic unit but no naturally occurring porous material is completely impermeable.*

Impact of Climate Change
The impact of climate change on future supplies of ground water and surface water over the long term must be assessed. A simple comparison of maps and air photos of surface water in the Baxter Creek watershed from the 1878 Belden Historic Atlas, 1950s air photos and today are very revealing as to the direction the water supply is heading…Baxter Creek may not be running in 2051!

Cost of Community Services (COCS)
In September 2011 Cavan Monaghan released research (Churchyard, Caldwell et al 2011.*The Cost of Community Services in the Township of Cavan Monaghan: A literature review on the fiscal impacts of land*
use for municipalities in Ontario, Canada) on the fiscal impact of different types of land use. Based on the premise that fiscal responsibility is a governance principle, the research pointed out the need to balance business
(commercial/industrial) development with residential development. Municipal residents have yet to see this occur in the municipality and a projected employment figure of 3,983 has no verifiable basis. Fiction, not fact at this point.

In 1977 there was a MZO on Cavan township <u>imposed by the Minister to halt the "checkerboarding"</u> that was creating hundreds of residential lots across the Township. Why?...because it was known to be fiscally and environmentally irresponsible. Now the municipality continues to add to this legacy. So, given the impact that Jail lands contamination will have some day on Millbrook water supplies and the inevitable continued reduction of ground and surface water supplies in the future due to climate change, I hope, should the municipality proceed with trying to meet these "provincially mandated" growth targets, that there will be in place, an agreement signed now with the province that absolves the Township from liability when the inevitable happens…
Sincerely,



The Cost of Community Services in the Township of Cavan Monaghan:

A literature review on the fiscal impacts of land use for municipalities in Ontario, Canada



Arthur Churchyard, M.Sc.

Dr. Wayne Caldwell, RPP, MCIP
School of Environmental Design and Rural Development
University of Guelph

With input from:
Dr. Yolande Chan
Past Director, The Monieson Centre at Queen's School of Business
Queen's University

September 2011
The Monieson Centre at Queen's School of Business

Acknowledgments

Our sincere thanks to municipal staff and provincial staff for guidance in the preparation of this literature review. Our thanks also go to the Township of Cavan Monaghan Council for vision and direction, particularly Mayor Fallis, who spent time with researchers to clarify the intent of the literature review and the municipal context.

The researchers also thank The Monieson Centre at Queen's School of Business, Queen's University, and the School of Environmental Design and Rural Development, University of Guelph, for providing the catalyst and collaborative academic resources to conduct this research.

Respectfully submitted,

Arthur Churchyard, M.Sc. Rural Planning and Development

Dr. Wayne Caldwell, MCIP, Director, School of Environmental Design and Rural Development

Table of Contents

1 Introduction 1

2 Review of Cost of Community Services Studies 2

2.1 Limitations in the use and interpretation of COCS studies 3

2.2 COCS in Canada 4

2.2.1 Results in the Township of Brighton, Ontario 5

2.2.2 Results in Red Deer County, Alberta 5

3 Considerations in Carrying out COCS Studies in Ontario 7

4 Community Services Context in Cavan Monaghan 10

4.1 Economic profile 10

4.2 Growth management 11

4.3 Growth-related servicing costs 11

5 Considering a COCS Study in Cavan Monaghan 13

5.1 Next steps for a COCS study in Cavan Monaghan 14

5.1.1 Developing land-use category definitions 14

5.1.2 Collecting data from the municipality 14

5.1.3 Attributing municipal expenses and revenues to specific land use categories 14

5.1.4 Calculating and analyzing expense/revenue ratios. 17

5.1.5 Using and communicating the results of a COCS study 17

5.2 Other methods of evaluating fiscal impacts of land use 17

6 Conclusions 19

7 References and Resource List 21

8 Appendix A – Frequency Distributions of COCS Study Ratios 23

9 Appendix B - Definitions 24

1 Introduction

At the first public meeting of the Cavan Monaghan Official Plan (OP) review consultation (May 6, 2009), community members asked for a fiscal impact analysis to be conducted as part of the OP review process. The suggestion was that fiscal responsibility should be used as a governance principle in the allocation of land uses in the Township. Community members identified a need to balance business (commercial/industrial) development with residential development. Agriculture was also discussed as an important component of the local economy.

This led to the identification of at least three major issues related to the fiscal costs and benefits of different land uses. As identified by Dyment (2009), these issues were:

1) The capacity of the Township to finance proposed levels of development in general;

2) The ongoing dependence of the Township on lottery revenue; and

3) The lack of public support for the proposed Fraserville Secondary Plan, which would have supported water and wastewater facilities to be used by Fraserville and the Kawartha Downs racetrack and casino.

As part of the OP review, and in response to community feedback, council has engaged in a research project with the School of Environmental Design and Rural Development, University of Guelph through The Monieson Centre at Queen's School of Business. In spring of 2011, Council approved the Literature Review of Land Use Benefits & Costs project. This project provided funding for a graduate student to prepare a 25-page literature review during Summer 2011.

This literature review is the product of that partnership. The review examines existing documents and academic literature with a goal of providing a series of observations and conclusions that would be relevant for rural Ontario municipalities. In particular these findings help to identify the relative revenues and expenses associated with different land uses. The literature review is intended to contribute to more informed decision-making, particularly at the stage of developing an Official Plan.

The review first examines the use of fiscal impact studies which focus on land use in municipalities across the United States. Following this, the use of such studies in Canada is discussed. A number of general considerations are identified for the application of common methods to the Canadian context. After establishing the general uses and dimensions of Cost of Community Services (COCS) studies, this literature review examines the particular context of the Township of Cavan Monaghan as an example of an Ontario municipality currently considering the fiscal impacts of its current balance of land uses. This is followed by a detailed analysis of how a COCS study might be carried out in the Township, and some preliminary discussions of how the study might be used and interpreted. Finally, a set of other types of fiscal impact analysis are mentioned, and conclusions are outlined based on the findings of the literature review. A list of definitions for common terms is provided in Appendix B.

2 Review of Cost of Community Services Studies

According to Kotchen and Schulte (2008), land use largely determines the revenues and expenses of municipal governments. Residential, commercial, industrial, agricultural, and environmental land uses all require different levels of community services and are taxed at different rates. As the balance of residential and non-residential land uses continues to shift, municipal leaders and staff are increasingly concerned with the long-term financial implications of land-use decisions (Kotchen and Schulte, 2008).

Most municipalities currently set operating and capital budgets within non-aligned expense and revenue categories. The categories used for expenses are different than those used for revenue. For example, a municipality may divide revenues into categories such as federal and provincial grants, property taxes, development charges and other revenue streams, while dividing expenses into a different set of service categories such as Protection, Transportation, Environment, Recreation and Planning and Development services. Although this method is useful for many municipality functions, it does not account for the differences in revenues and expenses attributed to various land uses.

Cost of Community Services (COCS) studies help to address this information gap. COCS studies consider expenses and revenues within four general land-use categories: residential, commercial, industrial, and working lands. Commercial and industrial land-use categories are often combined. Working lands typically include agriculture, but can also include forestry, resource extraction, and natural heritage lands. Each COCS study produces one ratio for each land-use category that expresses expenses as a proportion of total revenue in that category. For example, if a residential land-use category has a ratio of 1.2, that means $1.20 is spent for every $1.00 received from the residential land use.

In the United States, COCS studies are perhaps the most accessible and frequently used method to evaluate the fiscal impacts of different land uses (Kotchen and Schulte, 2008). COCS studies were originally developed by the American Farmland Trust, building on publications such as “The Fiscal Impact Handbook” (Burchell, 1978) and “Cost of Sprawl” (Real Estate Research Corporation, 1974). Since that time, over 125 COCS studies have been conducted in the United States.

Kotchen and Schulte (2008) conducted a quantitative review of COCS studies in the United States and found clear support for the common perception that residential ratios are greater than one (see Appendix A). This suggests that residential land uses are a net cost to municipalities, despite higher tax revenues in residential areas. Second, commercial, industrial and working lands tend to have ratios lower than one, which suggests that these land uses create a positive cash flow for the municipality. The results of these studies are remarkably consistent across widely varying regulatory, economic and environmental contexts. The median cost of community services (per dollar of revenue raised) was as follows: $0.27 for Commercial/Industrial lands (combined), $0.36 for Farm/Forest lands, and $1.15 for Residential lands. These median values are based on a review of all COCS studies up to 2002 by Freedgood et al. (2002). The frequency and range of ratios across the United States was further developed by Kotchen and Schulte (2008), and is illustrated in Appendix A. The implication is that municipalities should try to balance net residential costs with development of other land uses, or find ways to lower the residential expense/revenue ratio. COCS studies are particularly useful for considering not only the fiscal balance within each land use, but also the overall fiscal balance amongst all land uses.

2.1 Limitations in the use and interpretation of COCS studies

COCS studies are popular because they are cost-effective and easy to understand, especially when compared to other tools that may be used during the budgeting and Official Plan review process for different purposes (e.g., population projections, build-out scenarios, and financial forecasting). The simplicity of COCS studies also means that their use and interpretation is limited in a number of ways.

Greenaway and Sanders (2006) identify a number of COCS study limitations, which can be summarized as follows:

Lack of predictive capability: COCS studies show a retroactive snapshot of fiscal land-use implications for a one-year time frame. They should not be used for prediction of the same implications in future time frames. This limitation may be remediated by conducting COCS studies over a large set of consecutive time frames, but COCS studies have not typically been used in such a way for prediction of land-use costs or benefits.

Comparison to other municipalities: Although all COCS studies use similar methodologies, the specific methods used in each municipality vary considerably. This is because of the unique record-keeping and fiscal anomalies in each municipality. Many municipalities have different revenue sources, spending priorities and demands for services. As such, COCS study ratios should not be compared between municipalities without an accompanying analysis of the differences in study methods. Section 3 provides a discussion of how different study methods can affect ratio results.

Target year is not an average year: COCS studies typically target a single fiscal year for analysis. As such, any anomalies that occur in that year are included in the analysis. Major capital initiatives, natural disasters, recessions and other anomalies could significantly increase or decrease revenues and expenses in that particular year, even though such costs are not present in other years. The target year should not be interpreted as an average year.

Data gaps: COCS studies are highly adaptable to differing availabilities of local data. Sometimes records may not be available, or the existing records may not be easily attributed to one land use over another. Approximations are frequently used and occasionally large data gaps require fallback percentages to be used. For example, tax assessment percentages may be used as an approximation for the proportion of servicing costs allocated. Study results should clearly state any such approximations and data sources. Each municipality will have its own challenges with lack of data. These challenges should be used to inform future improvements to municipal service data collection.

Freedgood et al. (2002) also identify several important limitations:

Expenses and revenues vs. costs and benefits: COCS studies are focused on expenses and revenues as they appear in budgets and financial statements. Expenses and revenues must have existing market values in order to appear in municipal budgets. Thus COCS studies do not measure non-market values and externalities that would otherwise be attributed to specific land uses. These could include pollution, traffic congestion, loss of green space, environmental amenities and community character. Quantifying externalities is not part of the COCS methodology, although it is an important part of broader economic research and could be useful to municipalities as a complement to COCS studies.

Generalized attribution of expenses and revenues: Most COCS studies average revenues and costs within a land-use and thus do not differentiate between different kinds of development within that land-use. For example, higher density development might be expected to pay more of its servicing requirements than lower density development. Some commercial and industrial developments may vary widely in assessment value and servicing requirements. One new commercial development may double the number of jobs available in a community. Additionally, agriculture and forestry are known to have many positive externalities not accounted for in municipal budgets. A separate but similar limitation is that a COCS study may attribute some expenses and revenues differently across land uses, despite the fact that, at a political level, they are intended to benefit all land uses equally (e.g., Councillors' salaries).

Finally, Kotchen and Schulte (2008) identify some important limitations in interpreting COCS study results, summarized as follows:

Marginal changes in land-use: COCS studies should not be used to discuss the impacts of marginal changes in land-use. The ratios represent cumulative fiscal impacts and would not apply equally to the addition of one extra house at a time, or 100 new acres designated commercial. Impacts at the marginal level are difficult to predict, and may indeed add nothing to servicing costs, until cumulative change builds up to require a new threshold of services. Predictions should not be made on a case-by-case basis based on COCS study results. Instead, a municipality can use the results to determine the relative expenses and revenues from particular land uses (as discussed in Crompton, 2002; and Deller, 2002).

Land supply and magnitude of assessment value: Since COCS studies use ratios, they do not account for land supply considerations and the actual magnitudes of assessment values and servicing costs (as discussed in Kelsey, 1996). First, land supply considerations may be important if a municipality already has more industrial land than it needs, which certainly occurs in rural areas. Second, the actual magnitude of assessment value should further inform municipal decisions, rather than considering only the ratios. For example, if a residential land-use ratio was 1.1, based on expenses of $3.3 million and revenues of $3 million, it would not largely influence the ratio to increase or decrease expenses or revenues by $100,000. In contrast, an agricultural land-use ratio may be 0.8, based on expenses of $80,000 expenses and revenues of $100,000. If the agricultural expenses or revenues were changed by $100,000, the impact on the agricultural ratio would be quite high, despite the fact that a $100,000 change is low in magnitude compared to expenses and revenues associated with residential land uses. This makes agricultural land uses particularly susceptible to small variations from year to year, such as increased expenses related to grass or barn fires.

Despite these limitations, COCS studies have many merits for decision makers in rural and suburban communities with limited budgets that are experiencing rapid land use changes. COCS studies provide a simple and effective way to assess relative expenses and revenues of different land uses in the unique circumstances of individual municipalities.

2.2 COCS in Canada

COCS studies have not been used as frequently in Canada as in the United States. This may be partially due to the fact that American municipalities were the first to use and promote COCS studies. Alternately, this could reflect the greater complexity of the Canadian context, in which municipalities are

legally 'creatures' of the provinces, and upper tiers often provide various layers of public services that overlap with services provided by lower tiers.

To date in Canada, one COCS-type study was conducted in the Township of Brighton (County of Northumberland) by the Ministry of Municipal Affairs and Housing in 1988. In 2006, a second COCS study was conducted in Red Deer, Alberta. These studies demonstrate that COCS studies can be relevant in the Canadian context. However, given that no COCS study has recently been conducted in Ontario, additional exploration of the possibility is required in order to determine applicability.

2.2.1 Results in the Township of Brighton, Ontario

The 1988 study in Brighton, Ontario, was not a COCS study in the strict sense, but it did use cost/benefit measures to discuss the balance of expenses and revenues for different land uses in Brighton. The study found that residential development drew negatively from the municipal budget, despite being a large part of the tax base. The study especially discouraged new rural lot creation because the costs of servicing rural residential properties represented the greatest losses among the land use categories. It also found that high tax increases were required to offset declining residential property assessment in some rural areas.

The study identified Brighton as a specific example of how scattered residential development does not attract new commercial and industrial investment to improve the tax base (MMAH, 1988). As a further negative impact, scattered residential development actually left small hamlets and settlement areas without the continual reinvestment required to maintain viable rural communities. Brighton was chosen as a municipality with sound financial management that was typical of rural municipalities at that time. Despite the high costs of scattered residential development, the costs of residential uses in the township were balanced by revenues from other land uses.

2.2.2 Results in Red Deer County, Alberta

Table 1: Baseline Ratios for land uses in Red Deer County (not including education costs)

	Commercial	Industrial	Residential	Agriculture	Totals
Expenses	$3,438,489	$1,079,793	$16,531,954	$1,740,729	$22,790,965
Revenues	$3,431,567	$7,714,203	$9,966,580	$1,727,763	$22,840,112
Ratio	**1 : 1.00**	**1 : 0.14**	**1 : 1.66**	**1 : 1.01**	

The Red Deer results revealed several interesting differences compared to studies conducted in the United States. This COCS study kept industrial and commercial uses separate, unlike many other studies. With this arrangement, commercial land use had a ratio of 1:1, essentially 'paying for itself'. Industrial land use more than paid for itself, which matches other COCS studies results. This is partly due to the importance of oil and gas revenues in Red Deer County. Residential land use did not pay for itself, even

when education was excluded from the ratio values (ratio 1:1.66). This is likely because of the amount of staff time dedicated to residential concerns and the proportionally higher residential use of roads. Finally, agriculture also had a ratio of roughly 1:1, although this ratio was higher than other studies. This may be partially due to a higher number of calls for grass fires in the study year (2004). Note that the cost of residential land uses would have been 1:1.81 if education costs had been included, while the cost of all other land uses would have decreased.

3 Considerations in Carrying out COCS Studies in Ontario

COCS studies are designed to accommodate varying data availability and tight budgets. As such, COCS studies are able to provide meaningful approximations of the cost/benefit ratio of a specific land use in a particular municipality quickly. Costs and benefits are much more complex in reality, and studies should attempt to capture this complexity to the greatest degree possible, given data and budget constraints. If some types of data must be prioritized, it is important to consider the following factors and their impacts on certain land-use ratios.

The largest components of a municipal budget are the most important to allocate appropriately in a COCS study. In the Township of Cavan Monaghan and many other rural municipalities, these large budget items are transportation services, fire protection and police services, and economic development. However, if a small budget item affects a category with small magnitudes (e.g., agriculture), that number should be carefully attributed even if it is a small component of the overall municipal budget. This is because ratios derived from small magnitudes tend to be highly sensitive to the attribution of even small expenses and revenues to those categories.

Farmland taxation: In Ontario, the Farmland and Managed Forest Assessment Grant Component provides funding to municipalities that find themselves with limited property assessment because their tax base is comprised of a significant amount of farmland and managed forest properties. The grant provides funding equivalent to 300 per cent of the municipal revenue generated from farmland and managed forest assessment where these properties comprise 20 per cent or more of the municipality's tax base. Municipalities that have between five per cent and 20 per cent of their tax base made up of farm and managed forest properties receive a portion of this funding on a sliding scale (MPAC, 2011). Since 2.4% of Cavan Monaghan's tax revenue is derived from farm and forest properties, it does not appear to be eligible for this grant. Before 1998, all properties in the farm tax class would have paid the full residential tax rate, and received a rebate from the provincial government. However, this rebate was downloaded to municipalities in 1998 (OMAFRA, 2008). Upper-tier and single-tier municipalities now have the option to reduce the municipal tax rates on the farm property class to below 25 per cent of the residential tax rate, without a provincial rebate. This is an important consideration for COCS studies in Ontario.

Rural communities grants: The provincial Rural Communities Grant Component provides funding to municipalities based on the proportion of their population residing in rural areas or small communities. Municipalities with a Rural and Small Community Measure of 75 per cent or more receive the full per-household amount of $156. Cavan Monaghan is eligible for this grant because 100% of its residents reside in rural areas and small towns, as defined by the Municipal Property Assessment Corporation (MPAC). Municipalities with a Rural and Small Community Measure between 25 per cent and 75 per cent receive a portion of potential total funding based on a sliding scale (MPAC, 2011).

Density and median home value: Planning decisions tend to focus on encouraging certain types of residential development to increase density and real estate values. It should be noted that COCS studies do not clearly differentiate between types of residential development. All residential types are averaged across types whether high or low density, or high or low assessment value. It would be difficult in many

circumstances to determine whether residents in higher-valued homes use more services than those in lower-valued homes. This is relevant in the case of Cavan Monaghan because there are different levels of environmental and water services in the different wards of the Township. In an ideal COCS study, these residential services could be divided amongst different residential land uses to create a more sophisticated ratio estimate. Kotchen and Schulte (2008) also recommend further investigations into the effect of density on servicing costs.

Whether to count agricultural houses in the residential category: According to Kotchen and Schulte (2008), including farm houses in the agricultural/open-space category, rather than the residential category, increases agricultural/open-space ratios as much as 60 percent. This choice is fairly clear in Ontario, however, given that farm houses are assessed at residential rates and contribute to the residential tax revenue base. Some arguments could be made that rural houses are more expensive to service than residential houses in urban areas. However, the balance of services between residential types is not intended to be determined by COCS studies. More in depth analysis of records would be required.

Whether to count the educational budget: According to Kotchen and Schulte (2008), if municipalities in the United States included the school budget in a COCS study, this would increase residential ratios by more than 15 percent on average. A similar situation exists in Red Deer County, Alberta. According to Greenaway and Sanders (2006), if ratios for Red Deer included school services, the residential ratio would increase by 13%. In Ontario, responsibility for education was uploaded to the province in 1998. However, municipalities still collect educational taxes. These taxes are then allocated to school boards by the province. The budget of Cavan Monaghan does not indicate educational taxes; they need not be considered in this instance. A COCS study for the County of Peterborough would need to consider this question.

Whether to count County/Regional property taxes and services: Servicing agreements between lower- and upper-tier municipalities are variable across Ontario. This relationship is perhaps even more complicated than many municipalities in the United States, which tend to have higher tax control. If a study is intended to be used by a lower-tier municipality, it is useful to focus on revenues collected by that municipality and expenses incurred by that municipality. If it is possible to attribute expenses that are part of the upper-tier levy, this should be done. However, if this process is too complicated or not dependable, analysis should not include the portion of tax collected by the county/region. A more sophisticated COCS study could consider all lower tiers within an upper tier in order to develop a more comprehensive picture of the costs of servicing different land uses. This would help to incorporate costs that are incurred at the upper tier, including planning, economic development, and police services.

Whether to conduct interviews or attribute expenses/revenues using other means: In the only other recent COCS study conducted in Canada, Greenaway and Sanders (2006) depend on interviews and estimates of staff time as approximations (‘proxies’) for actual records. For example, if a planner allocated 80% of his or her time to reviewing residential development applications, then 80% of the planner’s salary could be allocated to the residential land use. This would likely be an effective approach in Cavan Monaghan. Where possible, interviews should be supplemented with municipal records. Records for large budget items should be prioritized. Where records and interviews are insufficient or

unavailable, it is also possible to attribute expenses and revenues based on fallback percentages. These percentages can be developed based on averages in other categories, or borrowed from other studies. However, fallback percentages should be avoided if possible and their use should be clearly noted (see the definition of fallback percentages in Appendix B).

In addition to the specific considerations above, there are general considerations at play in the broader service provision arrangements between the province and municipalities. In 1998, the provincial government imposed a Local Services Realignment (LSR) which uploaded the costs for public education to the province, while downloading full or partial responsibility and costs for social housing, social assistance, public transit, child care, public health and land ambulance services to municipalities. The province committed that the process would be revenue neutral, using the Community Reinvestment Fund (CRF) to address local fiscal capacity. However, the Provincial Auditor found in 2001 that the CRF did not meet the commitment to revenue neutrality of the LSR. In 2008, the province proposed significant changes to a number of fiscal service delivery arrangements (MMAH, 2008a). These changes will take effect through gradual changes over the next four to ten years. Changes include the full uploading of Ontario Works to the province, uploading of the Ontario Drug Benefits and Ontario Disability Support Plan, and the uploading of Provincial Courts services. A number of general considerations for infrastructure and services for people are also underway. The CRF is now replaced by the Ontario Municipal Partnership Fund (OMPF), which further aligns provincial transfer payments with municipal capacity needs. In light of uploaded services, transfer payments available in the OMPF will gradually decrease to a total of $500 million by 2016. Full details of the changes made, and their implications to specific municipalities, are outlined by the Ministry of Municipal Affairs and Housing in the Provincial-Municipal Fiscal and Service Delivery Review (2008a).

4 Community Services Context in Cavan Monaghan

The Township of Cavan Monaghan is located in the south-west quadrant of the County of Peterborough, in Central Ontario. The Township is an amalgamation of the former Townships of Cavan, North Monaghan and the former Village of Millbrook, which occurred in 1998. The municipality is currently in the process of generating the new Cavan-Millbrook-North Monaghan Official Plan, which will incorporate policies for all areas of the Township including the Millbrook settlement area and the Fraserville Secondary Plan Area up to the year 2031. In preparation for this review, the municipality has drawn upon a number of informative studies.

4.1 Economic profile

According to Dyment (2009), major economic activities in Cavan Monaghan include agriculture, manufacturing, processing, education and technology. There appear to be a number of economic development opportunities in the industrial and commercial nodes at the Cavan/Highway 115 intersection, Fraserville, and the Peterborough Airport business park. The beginning of a manufacturing and processing cluster is formed by General Electric, PepsiCo (Quaker), Sysco foods, Siemens Miltronics, and others. Currently, 13% of the labour force in Cavan Monaghan works in manufacturing. However, expansion of some manufacturing uses may require water and sewage treatment capacity, which is currently not available in Fraserville.

According to a study of agricultural impacts in the City of Kawartha Lakes and the Greater Peterborough Area, 18% of the area's gross farm receipts are generated in Cavan Monaghan (approximately $13 million). Agriculture has a regional economic impact of approximately $353 million, or $410 million including labour income. This income supports a broad variety of economic strengths in the Township of Cavan Monaghan. Key farm related industries include farm commodities, the equestrian industry, farm tourism, eco-tourism in the Oak Ridges Moraine lands, home occupations, and renewable energy installations.

Tourism is another important economic activity. This includes tourism commercial zones such as Kawartha Downs, and the Millbrook downtown and Fairgrounds. A number of home occupations also generate tourism activity.

Institutional and technology uses also generate economic activity at Trent University, Fleming College, and the associated Research Innovation Network. The provincial jail lands present a significant institutional opportunity.

In light of these economic activities, consultants and public stakeholders have recommended that the municipality pursue an 'appropriate' mix and range of employment uses, including industrial, commercial and institutional uses to meet long-term needs (Dyment, 2009). A Peterborough County Strategy Session facilitated by the Queen's Executive Decision Centre identified a need for innovative infrastructure for long term sustainable growth to capture more of the technology industry, and a need to increase the availability of fully serviced industrial land for manufacturing. Although these recommendations are being considered in the OP review process, the difficult decision relates to what an appropriate mix of uses might be.

4.2 Growth management

Growth in the Township of Cavan Monaghan has been projected in a number of scenarios. Total population growth by 2031 has been projected anywhere in the range of 10,384 to 15,150. The 2006 Census population was 8,828. This wide variation in projected population corresponds to different assumptions about average household size, future levels of servicing and changes to the Official Plan. Much depends on how growth is assumed to be concentrated in Fraserville-North Monaghan and/or Millbrook. Based on a 16.8% share of overall County growth, as promoted by the County in response to the Growth Plan for the Greater Golden Horseshoe, Cavan Monaghan would have a projected population of 12,015 in 2031. Hemson Consulting projected a population of 11,267 by 2031, which was similar to Lapointe Consulting in 2008, which determined the population would be 12,728 by 2031.

After considering the various population growth projections, Dyment (2009) projected demand for an additional 1,514 - 1,696 households in Cavan Monaghan by 2031. The population of Cavan Monaghan is completely rural and small town, as defined by Statistics Canada. Single low-density dwellings comprise 96% of building inventory. Existing vacant lots may provide up to 750 additional dwelling units. This represents a fairly traditional rural residential development pattern. An additional 78 hectares of land would be required to accommodate projected residential development in Fraserville and Millbrook (with a 70% low density, 30% high density split) (Dyment, 2009).

Increases in residential development are linked to requirements for an additional 27.8 to 36.9 hectares of employment lands by 2031 (based on Population:Job ratios of 4:1 and 3:1). Floor area estimates were also prepared by Watson and Associates (2010). The forecasted incremental Gross Floor Area (GFA) increase for Cavan Monaghan is 429,100 square feet over the residential buildout projection period (18 years) and 1,568,000 square feet over the non-residential buildout projection period (Watson and Associates, 2010).

4.3 Growth-related servicing costs

The *Development Charges Act* 1997 allows municipalities to recoup a portion of increased servicing costs attributable to anticipated development through development charges. These charges must be based on estimates of the increased municipal servicing costs. There must be a clear link between the anticipated development charge and the estimated increase in the need for services. Development charges are intended to be applied to infrastructure/capital type services (25.7% of the Cavan Monaghan budget in 2011), and not operating budgets (34.5% of the 2011 budget). Development charges do not include a number of costs. These include costs that do not change the current level of service ceiling; costs within existing uncommitted (excess) servicing capacity; benefits to existing development; anticipated grants, subsidies and other contributions; and a 10% reduction in the development charge for certain services.

The “Development Charges Background Study” prepared by Watson and Associates (2010) provides a detailed analysis of the costs of new development according to a number of service categories and land-use classes. The study distinguishes between township-wide services (roads and related, fire protection services, outdoor recreation services, indoor recreation services, library services, and administration)

and Millbrook area-specific services (wastewater services and water services). Due to additional water and wastewater services, development charges in Millbrook are higher.

The development charges study distinguishes between a number of residential use classes: single and semi-detached dwellings; apartments (above or below two bedrooms); multiple dwellings; and special care units. Non-residential type development charges are combined in a single use class. As such, the development charges study provides a head start in attributing certain costs to residential and non-residential land uses, potentially reducing the amount of work required to conduct a COCS study. For example, Watson and Associates (2010) determine that 80% of the $321,000 administrative costs dedicated to studies related to growth and capital works, can be attributed to residential and 20% to non-residential. Further work would be required to ascertain specific attributions within the non-residential category (distinguishing between agriculture, commercial, and industrial development).

5 Considering a COCS Study in Cavan Monaghan

Multiple studies have identified the implications of growth in Cavan Monaghan and the need to carefully consider an appropriate mix of residential, commercial, industrial and agricultural uses. Given the variety of information already available, what functional information could be further provided by a COCS study? Would a COCS study be appropriate in Cavan Monaghan?

Many of the studies generated so far provide population and land-use projections for the coming decade. These projections are based on empirical data and assumptions about future conditions. However, none of the studies provides an assessment of the full expenses and revenues attributed to specific land uses in the municipality. This information would be useful in answering the question of how expenses and revenues are currently balanced across land uses in Cavan Monaghan. Although this information could not be used to predict the appropriate balance of land uses in the Official Plan, it is useful in informing debates about what the current numbers are. This is especially useful in identifying the value of rural landscapes compared to other land uses on an expense/revenue basis.

As such, a COCS study would be potentially valuable as a rapid evaluation method for measuring how servicing expenses and revenues actually align across land uses. In particular, a COCS study would put an approximate dollar value on the current level of servicing in each land use, for a one year time period (unless multiple years were analyzed). This would help to provide an estimate of both capital and operational servicing costs, rather than capital considerations only, as is the case in the development charges study. This dollar value is only useful in comparisons between land uses, however, and not for creating buildout scenarios. A COCS study could be repeated periodically as a series of snapshots throughout the Official Plan period to 2031. It is important to emphasize that COCS studies are retrospective. They may inform future decisions, but they are not predictive.

Before examining a potential COCS study in Cavan Monaghan, two special circumstances should be considered. First, 44% of municipal revenues were derived from reserve funds in 2011. A large portion of these funds were dependent on casino revenues. This is a considerable exception compared to many other municipalities. Secondly, as of March 3rd, 2011, the municipality has submitted $494,123.61 and received $309,964.78 through the Build Canada Fund for a municipal water and sewer project in Fraserville (Hurley, 2011). Council has decided not to move forward with this project and the federal and provincial governments require that monies received by the municipality be returned if the project does not proceed. Subject to negotiations with the Build Canada Fund, some funding claims may be reallocated to expanding water and wastewater infrastructure in Millbrook.

COCS studies are most straight-forward in municipalities where the majority of revenues are generated by property taxes; this means that a COCS study in Cavan Monaghan could be more complicated than previous studies, due to dependence on non-traditional revenue sources such as the casino. Additionally, COCS studies are most reliable when major capital projects are amortized in the budget. Amortization prevents large fluctuations in the ratios between land uses due to allocation of capital projects to a single fiscal year. The Fraserville servicing project represents expenses that could not be amortized and that may further complicate a COCS study in Cavan Monaghan. This does not mean that a COCS study would be inappropriate, but it does indicate the need for caution in interpreting results.

5.1 Next steps for a COCS study in Cavan Monaghan

Traditionally, COCS studies proceed in four major stages:

1) Develop land use category definitions;
2) Collect data from the municipality;
3) Attribute municipal expenses and revenues to specific land-use categories; and
4) Calculate and analyze expense/revenue ratios.

The following preliminary analysis uses 2011 as the target fiscal year. Wherever 2011 numbers were not available, 2010 numbers were used.

5.1.1 Developing land-use category definitions

Based on preliminary conversations with Township staff, it appears that it is relatively feasible to quickly attribute servicing expenses to residential and non-residential uses of land. This was also reinforced in the results of the development charges study, which used a residential/non-residential split for projecting and attributing servicing costs. This type of two-class system also aligns to some degree with the need for the Township to identify employment lands in response to the requirements of the Growth Plan for the Greater Golden Horseshoe. It should be noted that employment lands would not include agricultural lands, however. Traditionally, a COCS study would use three or four categories: Residential, Agricultural (working lands), and Industrial/Commercial (in some studies, Industrial and Commercial categories are split). This four category approach would still be the most informative, despite the reality that servicing expenses are more readily attributed to residential/non-residential land uses. Another consideration is whether to use more than one residential land class, as outlined in Watson and Associates (2010). Of particular interest is the difference in servicing costs inside Millbrook due to water and sewage services.

5.1.2 Collecting data from the municipality

If a COCS study were to be pursued, further background information would need to be collected to provide an understanding of County corporate structure, the decision-making process, land-use divisions, zoning and assessment practices and protocols, departmental activities, special circumstances in the target year (e.g. 2011), and available Geographic Information System (GIS) support. The researcher would need to gather financial data for the target year, including audited actuals and program budgets. Much of this information was readily gathered on a two-day visit to the municipality by one of the authors of this literature review.

5.1.3 Attributing municipal expenses and revenues to specific land use categories

Greenaway and Sanders (2006) used interviews with Red Deer County department directors and program managers to attribute expenses and revenues to specific land uses. These interviews included group meetings in which expenses/revenues that were dependent on multiple departments could be discussed between related staff. A similar approach would be useful in Cavan Monaghan. Each program manager would be asked to describe their program, providing a context for attributing dollars. Greenaway and Sanders (2006) often used staff time as an approximate measure of the proportion of spending attributed to each land use. It is useful to collect a rationale from each interviewee as to why they estimated their time in a particular way. For expenses/revenues which are not easily attributed to specific land uses, fallback percentages can be used, but should be avoided if possible.

The Township of Cavan Monaghan has a 2011 budget of $14.3 million. This budget can be divided as follows: 34.5% operating, 25.7% capital, 24.3% contributions to reserves, 9.9% police services, and 5.6% other. Each of these categories represents a set of services and projects carried out by the municipality.

Tax rates differ slightly between the wards of Cavan, Millbrook and North Monaghan, but are generally as follows: Residential is 1%; Commercial is 2.2%; Industrial is 3.3%; Farmland is 0.25%. The implementation of a COCS study in Cavan Monaghan should be carried out with caution because only 37% of revenues are directly attributable to specific land uses. Conversely, 44% of Cavan Monaghan revenues are derived from reserve funds. Reserve funds consist of funds saved from previous years for future uses. Reserve funds are therefore extra sources of revenue that may be spent in a fiscal year, but were not collected through taxes in that same year, and are not directly attributable to any specific land use. The exception to this is the revenues derived from the lottery reserve fund, which can be attributed to the commercial land use. The reserve fund from lottery revenues appears to vary from year to year. Non-lottery reserve fund revenues could be allocated using a fallback percentage. One way to determine the fallback percentage is to use the percentage of taxes derived from each of the land use categories. In 2011, the percentages were 10.2% commercial, 2.4% industrial, 84.9% residential and 2.4% agricultural (as illustrated in Table 2).

Table 2: Assessment and tax revenue values classified by land use 2011 ($ values)

	Commercial (includes New Commercial)	Industrial (includes Pipeline assessment)	Residential (includes Multi-residential assessment)	Agricultural (includes managed forest)	Tax Exempt	Total
Assessment value	$84,663,486	$13,782,556	$768,927,325	$89,166,619	$45,717,541	$1,002,257,527
% Total assessment	8.45	1.4	76.72	8.90	4.56	
Tax collected	$408,611.70	$97,728.91	$3,396,217.6	$96,334.49	0	$3,998,892.65
% Total tax collected	10.22	2.44	84.93	2.41	0	

Table 3 attributes the three largest revenue classes: property taxes, reserve funds (non-lottery), and lottery reserve funds. This is a preliminary example of how revenues might be allocated in the Township. It is not a final analysis and should not be used for interpretation. This table illustrates the important question of whether or not to include lottery reserve revenues. If these revenues are included, the commercial revenue class would be larger than all the other classes combined by a factor of 1.34. This could create a skewed ratio for commercial (or any category in which commercial is combined with other classes).

Table 3: Revenue sources classified by land use 2011 ($ values)

	Commercial	Industrial	Residential	Agricultural	Total from 2011 budget
General tax levy (Property taxes)	$408,612	$97,729	$3,396,218	$96,334	$3,998,893
Development charges	Not Attributed	Not Attributed	Not Attributed	Not Attributed	$252,950
Reserve funds (non-lottery funds, using fallback percentage)	$183,812	$43,963	$1,527,768	$43,336	$1,798,878
Lottery reserve funds	$6,400,000	0	0	0	$6,400,000
Env. Service and BIA charges	Not Attributed	Not Attributed	Not Attributed	Not Attributed	$293,116
Provincial/federal grants	Not Attributed	Not Attributed	Not Attributed	Not Attributed	$846,000
Other revenue	Not Attributed	Not Attributed	Not Attributed	Not Attributed	$709,345
Totals	**$6,992,423**	**$141,692**	**$4,923,986**	**$139,670**	**$12,197,770***
*This represents 85% of total revenues. The total is 14,299,181 if non-attributed revenues are included. Note that values in this table have been rounded to the dollar.					

Another table focused on expenses would need to be prepared. This table would attribute the largest service expenses to specific land uses in Cavan Monaghan, including, in minimum, police and protective services, roads, economic development, and any other services that could feasibly be attributed. Preliminary conversations were carried out with municipal staff in the Planning, Economic Development, and Finance departments. Based on these conversations, it appears that municipal staff can readily attribute specific budget lines within their departments, occasionally using staff time as proxy. Some records also appear to be available in Roads and Protective Services. This indicates that further

interviews in the municipality would provide a useful basis for attributing expenses in the Township. This is further analysis that would be carried out in a full COCS study in future.

5.1.4 Calculating and analyzing expense/revenue ratios.

Once expenditure and revenue data have been attributed to land uses, the sums of these values would be used to create a series of ratios for the land classes that the Township decides to pursue in a COCS study. The ratio calculation is straightforward – [Sum of Expenses/Sum of Revenues] – for each specific land use. The resulting interpretation of the ratio would be that for every 1 dollar in revenues spent on a specific land use, some number of dollars was spent on services to that land use (see the range of values observed in other studies in Appendix A).

The ratios should be examined for anomalies and sensitivity analysis should be conducted for any expected outliers (e.g., lottery revenues, or Build Canada Fund expenses). It is already clear from this preliminary analysis that the ratio for farmland should be interpreted with caution because revenues for agricultural land are relatively small compared to the other categories (farmland represents 2.4% of overall tax revenues). The ratio for commercial should also be interpreted with caution because 92% of revenues from commercial are derived from a single commercial use (the casino).

5.1.5 Using and communicating the results of a COCS study

A fifth stage of a potential COCS study is deciding what to do with the results. Results could be further promoted and used in a number of ways, similar to other fiscal impact studies. Greenaway and Sanders (2006) identify a number of possible outcomes of a COCS study, summarized as follows:

- Informing visioning and community planning discussions
- Reviewing policy and evaluating policy impacts
- Comparing non-revenue and revenue-generating programs
- Understanding who uses municipal services, and identifying service gaps
- Identifying research gaps and municipal information needs
- Partnering with other municipalities to perform further cost/benefit analysis

5.2 Other methods of evaluating fiscal impacts of land use

Cost of Community Services (COCS) studies are only one amongst many methods of assessing municipal financial viability, though they are one of the best methods for questions related to the fiscal impacts of a municipality's current mix of land uses. A wide variety of other methods are discussed in the International City/County Management Association book, "Evaluating Financial Condition: A Handbook for Local Government" (ICMA, 2003). This book outlines both simple and sophisticated ways to assess financial viability. Methods include identifying relevant time frames, using different accounting techniques, identifying indicators for effectiveness, efficiency, and equity, and assessing fiscal impacts of development. The ICMA contains many Canadian member municipalities, though it does tend to focus on municipalities in the United States.

In a survey of Canadian municipalities, Marshall and Douglas (1997) identified a wide variety of fiscal viability measures in use across Canada. These measures include general services/provision measures, reserve fund and per capita measures, methods for assessing provincial transfer payments, and deficit- or debt-based indicators. Buildout scenarios and population growth projections were common. In each

category, Canadian municipalities evaluated questions such as “Are tax rates straining residents’ ability to pay?”, “Are reserve funds being depleted at an unplanned rate?”, and “How do revenues and expenditures compare to other similar municipalities?” Although the methods used across Canada vary widely, all measures tend to revolve around the capacity of a municipality to generate revenues equal to or greater than the expenses related to providing services and other costs demanded by the community. These measures are increasingly related to performance benchmarks and standardization of reporting indicators within and across provinces and territories.

Standardization of reporting measures is occurring in Ontario. Ontario municipalities are now required to participate in the Financial Information Return (FIR) conducted by the Ministry of Municipal Affairs and Housing (MMAH). Within the FIR, municipalities provide information that the MMAH uses to prepare fiscal health indicators in a number of servicing areas. These indicators describe fiscal health in terms of property taxes, assessment base, municipal servicing costs, economic indicators such as income and employment rates, and financial measures such as reserves per capita. According to composite ratings published in 2008, the Township of Cavan Monaghan is in the highest category of fiscal health (MMAH, 2008b). The Township fares well for most indicators, although there appears to be a dip in financial indicators that are determined on a per capita basis.

There are many other types of non-direct, non-fiscal sources of information that could inform debate about costs and benefits of different land uses. A wide literature exists that attempts to allocate dollar values to Environmental Goods and Services. A recent example of this is a report that identifies that services per hectare in the Greenbelt could be valued at $3,571 per hectare annually (Suzuki Foundation, 2008). There are many ways in which such measures have been proposed as a boost to rural municipal budgets (Economy League, 2010).

It is also important to consider indirect economic impacts between land uses that conflict or complement each other. One example of this is the impacts of rural non-farm development. From an agricultural standpoint, as each new residence replaces a farm, the number of customers for farm service centres also declines (Davidson, 1982). Beyond a certain threshold, those agricultural services leave as well, creating a downward spiral in the agricultural assessment base without any corresponding increase in residential assessment. Speculative values on land for residential purposes begin to interfere with the land values for farmland. This leaves farmers with a choice between cashing out on valuable (and highly taxed) lands or continuing to farm with low returns in an increasingly urbanized context (Zollinger and Krannich, 2002).

6 Conclusions

Kotchen and Schulte (2008) point out that municipalities and planning-related organizations have used COCS studies to argue against the common perception that further residential development automatically increases municipal health. COCS studies are also used to argue that working lands provide fiscal benefits, in the sense that they do not use more in service costs than they provide in tax revenues. Although many municipal councillors perceive additional residential development as a positive contribution to tax base, the overall expenses for servicing residential development tend to be higher than overall revenues from residential tax assessment.

Land use is a fundamental component of a municipality's fiscal health. It is surprising that more municipalities in Canada and the United States do not consider COCS style-studies to better understand current fiscal health as it relates to the balance of land uses in a municipality. The Township of Cavan Monaghan has taken an important first step in considering this type of study in its Official Plan review.

Despite the fact that municipal fiscal viability depends largely on balancing land uses, municipalities often do not know the actual measure of expenses and revenues within specific land-use categories. This means that municipalities often review budgets and Official Plans without quantitative measures of the fiscal implications of current land-use patterns. It is possible in many cases to generalize about results, but quantitative measures provide an additional level of certainty to decisions in which a balance of land uses must be achieved. Although there are a wide variety of factors that influence both the budgeting and planning processes, fiscal implications are common ground between these processes.

The findings of a COCS study may further reinforce that traditional forms of housing development no longer serve the needs of municipalities in similar situations as Cavan Monaghan. New residential lots are increasingly less likely to be created in rural areas. Municipalities should seriously consider how to increase their municipal tax base through agricultural, commercial and industrial land uses, which tend to contribute positively to the municipal budget. For example, municipalities can seek to attract value-added activities and agriculturally-related commercial and industrial developments that support existing and future agricultural uses, including equestrian industries.

At the same time, alternative residential development patterns are possible, which would change traditional relationships between land use and municipal finance. In an analysis of affordable housing strategies in rural Ontario, Slaunwhite (2009) found that rural municipalities are now seeking to use lower minimum lot sizes and to intensify existing hamlets and villages. For example, the United Counties of Leeds and Grenville Affordable Housing Strategy recommends secondary and garden suites to provide housing to seniors and assist with mortgage payments in low-income households.

Although the use of COCS studies is not yet widespread in Canada, these studies have become increasingly popular and influential in the United States. They are cited in land-use planning documents, government reports, academic research, and advocacy materials. COCS studies have promoted greater emphasis on economic considerations in debates over land use, which have otherwise focused on social, aesthetic, environmental, and legal concerns that are harder to quantify (Kotchen and Schulte, 2008). It is still important to consider all of these uses.

The use of a COCS study in Cavan Monaghan may indeed be useful in answering the types of questions now being asked. Amongst the many methods of assessing fiscal health, a COCS study would serve as a way to rapidly evaluate the balance of expenses and revenues in specific land uses. This would help to provide an estimate of both capital and operational servicing costs as they relate to each other, adding operational budget information to the detailed considerations of the capital budget already included in the "Development Charges Background Study" (Watson and Associates, 2010). A series of COCS studies carried out periodically would provide a set of important measures of land-use policy impacts in the coming decades.

Users of this review and future COCS studies should be aware that Cavan Monaghan also has a number of exceptional circumstances that should guide the interpretation of results. Results should contain sensitivity analysis of unique circumstances, including changes to the Canada Building Fund agreement and ongoing revenues from the casino should be included in any analysis of results. As indicated earlier, COCS studies do not make predictions, but rather provide a more detailed picture of the existing costs of development related to land uses.

7 References and Resource List

Burchell, R. W. and D. Listokin. 1978. The Fiscal Impact Handbook: Projecting the Local Costs and Revenues Related to Growth. New Brunswick, NJ, Center for Urban Policy Research.

Crompton, J. L. 2000. The Impact of Parks and Open Space on Property Values and the Property Tax Base. Ashburn, VA, Division of Professional Services, National Recreation and Parks Association.

Davidson, G. 1982. Agricultural Land Use Policy in Ontario. Doctoral thesis, University of Western Ontario.

Deller, S. C. 1999. The Limitations to Cost of Community Services Studies. Community Economics Newsletter, Center for Community Economic Development; University of Wisconsin Extension.

Dixon Esseks, J., H.E. Schmidt, K.L. Sullivan. 1999. Fiscal Costs and Public Safety Risks of Low-Density Residential Development on Farmland: Findings from Three Diverse Locations on the Urban Fringe of the Chicago Metro Area. Center for Agriculture in the Environment Working Paper No. 98-1. Dekalb, Illinois.

Dyment, J. 2009. Official Plan Consultation Reports. Meridian Planning Consultants. Files collected from the Township of Cavan Monaghan.

Economy League of Greater Philadelphia. 2010. The Economic Value of Protected Open Space in Southeastern Pennsylvania. Philadelphia, PA: GreenSpace Alliance.

Freedgood, J., L. Tanner, C. Mailler, A. Andrews, M. Adams. 2002. Cost of Community Services studies: Making the Case for Conservation. Published by the American Farmland Trust “Farmland Information Centre”. Northampton, MA.

Greenaway, G. and S. Sanders. 2006. The Fiscal Implications of Land Use: A "Cost of Community Services" Study for Red Deer County. Report 2: Main Report. Miistakis Institute, University of Calgary. Available online at www.rockies.ca

Hurley, Y. 2011. Fraserville Water and Wastewater Project. Report to Council. Available online at https://cavanmonaghan.civicweb.net/Documents/DocumentList.aspx?ID=23618

ICMA (International City/County Management Association). 2003. Evaluating Financial Condition: A Handbook for Local Government, 4th edition. Available for purchase at http://bookstore.icma.org/BestSeller_P981.cfm

Kelsey, T. W. 1996. The Fiscal Impacts of Alternative Land Uses: What Do Cost of Community Services Studies Really Tell Us? Journal of the Community Development Society 27(1): 78-89.

Kotchen, M.J. and S.L. Schulte. 2008. A Meta-Analysis of Cost of Community Service Studies. Presented to the colloquium, “Understanding Place and the Economics of Space” at Williams College in April 2008.

Marshall, J.A and D.J.A. Douglas. 1997. The viability of Canadian municipalities: Concepts and measurements. Intergovernmental Committee on Urban and Regional Research (ICURR). ICURR Press, Toronto.

MMAH (Ministry of Municipal Affairs and Housing). 1988. Financial Analysis of Residential Development: A Case Study for Brighton Township. Prepared by the Community Planning Branch.

MMAH (Ministry of Municipal Affairs and Housing). 2008a. Provincial-Municipal Fiscal and Service Delivery Review: Facing the Future Together. Available online at http://www.mah.gov.on.ca/Page181.aspx

MMAH (Ministry of Municipal Affairs and Housing). 2008b. Fiscal Health Composite Indicators by Municipality. Available online at http://www.mah.gov.on.ca/Page181.aspx

MMAH (Ministry of Municipal Affairs and Housing). 2010. Guide to municipal finance. Available online at http://www.mah.gov.on.ca/Page9057.aspx

MPAC (Municipal Property Assessment Corporation). 2011. Procedures for farmland property assessment. Available online at www.mpac.ca/pages_english/procedures/procedure_for_farmland_property_assessment.asp

OMAFRA (Ontario Ministry of Agriculture, Food and Rural Affairs). 2008 Farm property class tax rate information. Available online at http://www.omafra.gov.on.ca/english/policy/ftaxfaq.html

Planscape Consulting. 2006. City of Kawartha Lakes and the Greater Peterborough Area Agricultural Economic Impact Study. Available online at www.advantagekawarthalakes.ca/en/aboutUs/resources/Chapter5MeasuringEconomicImpactLR.pdf

Real Estate Research Corporation. 1974. The Costs of Sprawl: Environmental and Economic Costs of Alternative Residential Development Patterns at the Urban Fringe. For the Council on Environmental Quality, Department of Housing and Urban Development, Environmental Protection Agency. Washington, DC.

Slaunwhite, A. 2010. Under Pressure: Affordable Housing in Rural Ontario. Canadian Policy Research Networks. Available online at www.cprn.org

Suzuki Foundation. 2008. Wilson, S. Ontario's wealth, Canada's future: Appreciating the value of the Greenbelt's eco-services. Natural Capital Research and Consulting, BC. www.davidsuzuki.org/files/Conservation/DSF-Greenbelt-web.pdf

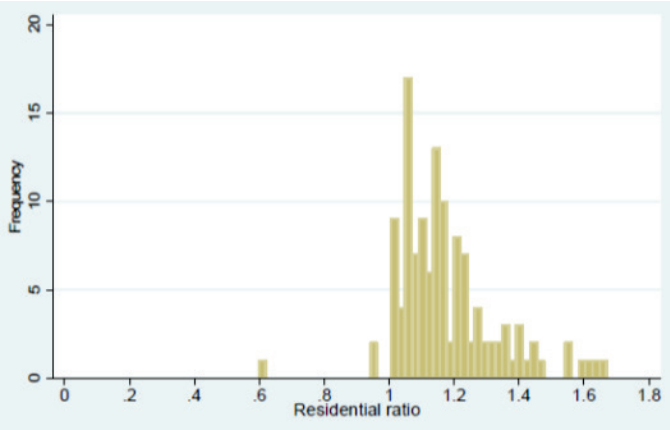
Watson and Associates Economists Ltd. 2010. Township of Cavan Monaghan: Development Charges Background Study. Available online at https://cavanmonaghan.civicweb.net/Documents/DocumentList.aspx

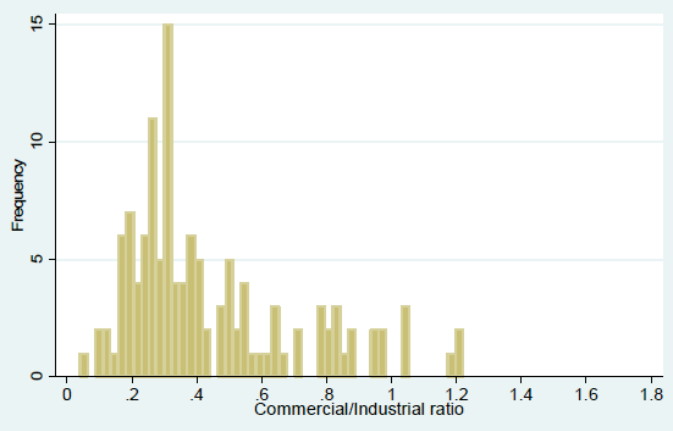
Zollinger, B. and R. Krannich. 2002. Factors Influencing Farmer's Expectations To Sell Agricultural Land For Non-Agricultural Uses. Rural Sociology. pp.442-463.

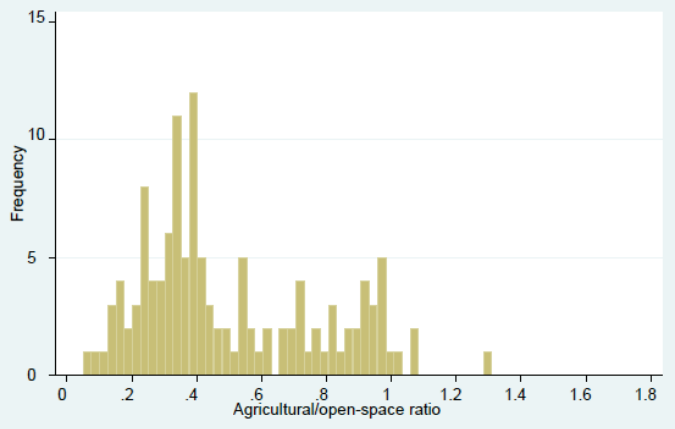
8 Appendix A – Frequency Distributions of COCS Study Ratios

Frequency distributions of cost of community service study ratios (i.e., the cost of services relative to a dollar of tax revenue) for residential, commercial/industrial, and agricultural/open-space land uses in 125 COCS studies in the United States.

Source: Kotchen and Schulte (2008)







9 Appendix B - Definitions

These definitions are derived from the Municipal Councillor's Guide (MAH, 2010).

Amortization of Tangible Capital Assets: Since 2009, municipalities must comply with PS 3150 – Tangible Capital Assets (TCA) for external reporting. Prior to 2009, municipalities often recorded TCAs as expenditures in the year they were purchased, and no TCA was recorded on the municipality's statement of financial position. Now, municipalities are required to record TCAs on the statement of financial position and to amortize (expense) the asset over its useful life on the statement of operations.

Capital budget: A capital budget typically provides for infrastructure to be maintained or new infrastructure needs to be met in the future. It may set out the specific capital projects to be approved for the budgetary period, such as capital improvements, land acquisitions, new facilities and equipment, and it identifies a source of financing for each.

Conditional grants: Conditional grants account for about 85 per cent of total provincial grants and are subject to specific eligibility and spending criteria. The major conditional grants are for transportation, health, social services and the environment. Unconditional grants, which represent about 15 percent of total provincial grants, consist mainly of funding provided through the Ontario Municipal Partnership Fund (OMPF). The fund assists municipalities with their share of social program costs, includes equalization measures for areas with limited property assessment, addresses challenges faced by northern and rural communities, and responds to policing costs in rural communities.

Development charges: Development charges are amounts levied to pay for growth-related capital costs such as roads, sewers and transit. They are used to fund the initial capital costs to build infrastructure needed to serve new growth (both residential and non-residential). Development charges do not pay for operating costs or for the future repair and rehabilitation of infrastructure.

Fallback percentages: Fallback percentages are used to allocate expenses or revenues which are difficult to allocate based on existing records (e.g., road maintenance) or may be inappropriate to allocate to a specific land use because they are intended to benefit all land uses equally (e.g., the role of councillors). Typically, fallback percentages for specific budget lines are based on the average percentage allocation of other budget lines in the same department. Other approaches include using percentages for different land uses from comparable municipalities; using percentages that have been averaged across a number of different municipalities; using percentages of property tax revenues from each land use to allocate other non-tax revenues; and using data from other sources to allocate revenues and expenses (e.g., one could allocate road expenses based on road use statistics in other jurisdictions). In this report, a fallback percentage is any percentage used to allocate expenses or revenues that is not based on municipal records or staff estimates of time spent providing services to specific land uses.

Full-accrual: Full-accrual accounting standards require municipalities to more fully account for their tangible capital assets – such as roads, bridges, buildings and water systems – as assets in their

financial statements. The new standards also require municipalities to include amortization of assets in their statement of operations. This change provides information regarding the consumption of tangible capital assets in the delivery of municipal services.

Operating budget: Includes expenses and revenues related to salaries, wages, benefits, heat, hydro, maintenance of buildings and infrastructure.

Property taxes: There are seven main property classes used in Ontario (residential, multi-residential, commercial, industrial, pipeline, farm, and managed forests) in which properties are generally categorized on the assessment roll. The average tax ratios prescribed by the provincial government are 2.74 for the multi-residential class, 1.98 for the commercial class, and 2.63 for the industrial class (note that Cavan Monaghan is quite a lot lower than this currently: 1 for agricultural, 1 for multi-residential, 1.10 for commercial, 1.54 for industrial).

Revenue: Some examples of revenue that municipalities may receive include:

- special area taxes
- conditional and unconditional grants
- payments in lieu of taxes
- property taxes
- investment income
- licenses, permits and rents
- fines and penalties
- development charges
- user fees and charges for services such as recreational and cultural facilities (libraries, pools, etc.) and local improvement charges (sidewalks, etc.)

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300
Toronto ON M2J 4Z8 Canada
T 416 497 8600 **F** 855 833 4022
rvanderson.com

RVA 205371

Monday, November 13th, 2023

[redacted]

Dear [redacted],

Re: Cavan Monaghan Water and Wastewater Master Servicing Study and Plan
Response to Comments and Questions

Thank you for attending the Public Information Centre (PIC) and your associated comments on the presented materials. Additionally, thank you for providing relevant background information and details regarding your comment.

This Master Servicing Study (MSS) follows Approach #1 (high level study) under the master planning framework of the Municipal Class Environmental Assessment (Class EA) process. As per the requirements for this approach, this MSS will complete Phase 1 and a portion of Phase 2 of the EA process. Any further Schedule B or C projects resulting from this MSS will require additional investigations to fulfill Class EA requirements. Generally, the MSS will aim to determine recommended solutions to address future water and wastewater capacity requirements, as well as provide recommendations for next steps leading to implementation.

The MSS relies on population/employment forecasts from the Township of Cavan Monaghan's previously completed Growth Management Strategy (GMS) Final Addendum Report, dated August 29, 2022, as prepared by Watson & Associates Economists Ltd.

The GMS Page 1-1 states:

"On August 28, 2020, the Province of Ontario released an Amendment (referred to as Amendment 1) to A Place to Grow: Growth Plan for the Greater Golden Horseshoe, 2019. The Growth Plan and Amendment 1 have been incorporated into an Office Consolidation, August 2020 document, hereinafter referred to as the Growth Plan, 2019. The updated Growth Plan, 2019 has been prepared in conjunction with a "new" Land Needs Assessment (L.N.A.) methodology for the Greater Golden Horseshoe (G.G.H.). These documents are in effect as of August 28, 2020. In response to Amendment 1 to the Growth Plan, 2019, Peterborough County recently completed its Municipal Comprehensive Review (M.C.R.) which sets out the long-term County (and its member municipalities) outlook for population, housing and employment growth as well as corresponding urban land requirements to the year 2051.".

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300
Toronto ON M2J 4Z8 Canada
T 416 497 8600 **F** 855 833 4022
rvanderson.com

Regarding Settlement Area Boundary Expansion, the GMS Page 3-1 states:

"Building on the residential and non-residential land needs established in Chapter 2, this chapter summarizes the proposed Settlement Area Boundary Expansion (S.A.B.E.) for the Millbrook Urban Settlement Area. As part of this process, consideration has been given to developing an urban land use structure that provides for a contiguous supply of designated Community Area and Employment Area lands over the long-term planning horizon.".

The GMS was prepared in close coordination with Township staff and Peterborough County staff who understand the needs of the local community. In addition, during the GMS and MSS studies Township/council reviewed the Provincial Growth Plan and provided commentary regarding what is realistic for a community in the Township.

Regarding the Former Millbrook Correctional Centre, the Township has copies of the 2018 Groundwater Monitoring Report dated January 30, 2019, prepared by Cole Engineering Group Ltd., the 2020-2021 Groundwater Monitoring Report dated April 22, 2021, prepared by GHD Limited, and the 2021-2022 Groundwater Monitoring Report dated April 14, 2022, prepared by GHD Limited. Copies of these reports can be provided upon request.

The 2021-2022 Groundwater Monitoring Report Page i states:

"PCE was not detected or detected at concentrations less than the applicable 2011 Table 2 Generic Standard (1.6 micrograms per litre [µg/L]) in all groundwater samples collected from the monitoring wells screened within Layer 1, Layer 2, and Layer 3 during the summer (May 2021 and August 2021), fall (November 2021), and winter (February 2022) sampling events. Notably, PCE was not detected during the 2021-2022 groundwater monitoring events conducted by GHD in monitoring well MW3-14 (Layer 3) along the eastern property boundary. PCE was consistently detected at MW3-14 exceeding or approaching the applicable SCS prior to the 2021-2022 groundwater monitoring program.".

The 2021-2022 Groundwater Monitoring Report Page i also states:

*"Based on the Mann-Kendall trend test, there are statistically-signi**fi**cant decreases in PCE concentrations at MW3-14 and MW6-16-1. At MW1-14 and MW5-15-5&6, there are no statistically signi**fi**cant PCE concentrations trends suggesting that concentrations are stable at these locations.".*

"MW" tags refer to monitoring wells on the Former Millbrook Correctional Centre property.

The Township takes samples of inorganic parameters in accordance with Drinking-Water System Number 220000781, "Millbrook Drinking Water System". Tetrachloroethylene (PCE) is a parameter tested at municipal wells. If requested, annual reports on the Drinking Water System can be provided. 2021 and 2022 Annual Reports for the Millbrook Drinking Water System showed water samples tested for Tetrachloroethylene were below the detection limit.

Regarding water supply, the Water and Wastewater MSS Public Info**rma**tion Centre dated June 21st, 2023, page 14 notes: "Hydrogeological investigations required to con**fi**rm water quantity & quality,

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300
Toronto ON M2J 4Z8 Canada
T 416 497 8600 **F** 855 833 4022
rvanderson.com

and to confirm ability to supply required future capacity.", directing that water supply will be further assessed through future investigations.

Regarding climate change, shortlisted alternatives in the MSS will be evaluated using a number of evaluation criteria, including environmental criterion, where climate change is a key factor.

We understand that the Township has limited financial resources. Shortlisted alternatives in the MSS will be evaluated using a number of evaluation criteria, including Cost. Infrastructure improvements will be implemented using a phased approach to optimize use of existing infrastructure to reduce
financial impacts.

We thank you again for your comments and input on the Township of Cavan Monaghan Master Servicing Study.

Yours very truly,

R.V. Anderson Associates Limited
Rika Law, P.Eng., PMP
2001 Sheppard Avenue East, Suite 300
Toronto, ON, M2J 4Z8
Tel: (416) 497 8600 ext. 1209
rlaw@rvanderson.com

Township of Cavan Monaghan, Public Works
Wayne Hancock, P.Eng.
Director of Public Works
988 County Road 10
Millbrook, Ontario, L0A 1G0
Tel: (705) 932-9327
Fax: (705) 932-3458
whancock@cavanmonaghan.net

Nikash Persaud

From: [redacted]
Sent: November 17, 2023 10:43 AM
To: Rika Law; [redacted]
Cc: 'Wayne Hancock'; 'Jessica Fradley'; 'John Connolly'; Matthew Grekula; Nikash Persaud; Dania Chehab; randres@rjandres.com
Subject: RE: 205371 - Millbrook Master Servicing Study - responses to comments

Categories: Filed by Newforma

Thank you Rika… we may have some more questions regarding the answers provided.

Just a quick question, have the questions and answers as well as any other questions and comments from members of the public been sent to all Cavan Monaghan council members? They are not included on the November 20th Council agenda.

[redacted]

From: Rika Law [mailto:rlaw@rvanderson.com]
Sent: November 13, 2023 1:12 PM
To: [redacted]
Cc: Wayne Hancock <whancock@cavanmonaghan.net>; Jessica Fradley <jfradley@cavanmonaghan.net>; John Connolly <jconnolly@cavanmonaghan.net>; Matthew Grekula <MGrekula@rvanderson.com>; Nikash Persaud <npersaud@rvanderson.com>; Dania Chehab <dchehab@rvanderson.com>; randres@rjandres.com
Subject: 205371 - Millbrook Master Servicing Study - responses to comments

Dear [redacted]

Thank you for your comments and attending the PIC as well as an individual meeting with the Project Team. Please see attached the responses to your questions/comments. For ease of review, we had put these into a table format and categorized the comments.

The Township intends to wrap up the Master Servicing Study quickly, because a number of the questions submitted can only be answered once further project specific field investigations are done, and those are to start after the Master Servicing Study is completed. As such, the Township intends to have a Council meeting on Nov 20th to discuss the draft Class EA report on the Master Servicing Study, and once that is done, it will go to the MECP for their draft review. Upon finalization of the Class EA report, there will be a formal 30-day review period for public, agencies, Indigenous communities and interest groups to provide comments. You are on the stakeholder list and will receive the Notice of Completion for where and when to find the final Class EA report for review.

Once the Master Servicing Study is completed, then the project specific Class EAs (i.e. additional well supply, water storage, WWTP expansion etc.) and associated investigations can occur and will go through their own public consultation process as well.

Thanks

Rika Law, P.Eng., PMP (she / her)

Team Lead, Principal

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300, Toronto ON M2J 4Z8
t 416 497 8600 ext. 1209 |

LinkedIn | Facebook | Website

R.V. Anderson Associates Limited has been engaged in the provision of professional engineering, operations, and management services since 1948. This message is intended only for the use of the individual(s) to whom it is addressed. If you are not the intended recipient(s), disclosure, copying, distribution and use are prohibited; please notify us immediately and delete this email from your systems. Please see http://www.rvanderson.com for Copyright and Terms of Use.

Nikash Persaud

From: [redacted]
Sent: November 24, 2023 11:55 AM
To: Rika Law
Cc: 'Wayne Hancock'; 'Jessica Fradley'; 'John Connolly'; Matthew Grekula; Nikash Persaud; Dania Chehab; randres@rjandres.com; [redacted] mgraham@cavanmonaghan.net; rhuntley@cavanmonaghan.net; nedgerton@cavanmonaghan.net; gbyrne@cavanmonaghan.net; lnachoff@cavanmonaghan.net
Subject: MSS Council Presentation Follow-Up Questions

Thank You Rika for the excellent presentation at the recent Cavan Monaghan Council meeting.

We do have some follow-up questions with respect to the answers provided to our submitted previous questions. These questions were included as appendices 6-4 in the report to Council. Our additional questions are in blue.

Respectfully,

[redacted]

Re: Question No. 5

How much water will be required to service all residential/commercial and industrial units – what is the 20 year plus expectation? What increase will be requested in a PTTW?

Answer

As per the Public Information Centre (PIC) on June 21st, 2023, the projected maximum day water demand required to support 2051 flow demands is approximately 6,214 m3/day. Additional hydrogeological studies which will be completed in the future to confirm what is the sustainable capacity of the existing municipal well field and of other possible groundwater sources. These reports may answer this question and can be available to the public/upon request once completed.

It was indicated at the (PIC) June 21st 2023 that the maximum day water demand to support the 2051 flow demands will be approximately 6214 m3/day.
We find it commendable that the Township has asked you to take the longer term approach to 2051 for the water wastewater services. But if that is the case it is quite possible that the other subdivisions mentioned in the Watson Report (Turner St. 85 units, Duke St 192 units and Centre St 51units =additional 328 units)might in fact come to fruition by 2051, so why wouldn't they be included in the projections for the future servicing requirement?

We do request a copy of the reports… thank you.

Re: Questions No. 6 and 49

What monitoring protocol will be in place to measure drawdown on the private wells? What contingency plans are in place if mitigation is required due to reduced or lack of water supply?

Answer No. 6

The hydrogeological investigation will consider impacts to nearby wells by taking baseline measurements and monitoring the draw down during the pump test of the test well. ***However, this pertains only to the private well owner(s) nearby who wish to participate.***

Question 49

Will the hydrogeological investigation extend beyond the Wellhead Protection Area? Will residents serviced by private wells outside the Wellhead Protection Area be contacted?

Answer No. 49

The residents serviced by private wells outside of the Wellhead Protection Area will ***not be contacted unless they***

wish to be included in the project stakeholder list for the future Water Supply Class EA.

How will private well owners be notified? Will there be door to door canvassing? This is being asked because the last time such an offer was made, residents did not understand the process and the reasons, so only 3 residents in Millbrook responded and that is not an accurate forecast. The Ontario well maps database indicates there are many more well users that could be impacted by a significant drawdown of the Millbrook aquifer. Once the extent of the Syer Line well aquifer is established, will every nearby resident also be notified so they can be included in the stakeholder list for the Water Supply Class EA?

Re: Question No. 9

How will overall prevailing drier and hotter conditions caused by a quickly changing climate factor into future servicing models

Answer

Since climate change could impact the groundwater supply and aquifer in different ways, the evaluation table for the water supply considered having groundwater wells in different aquifers an advantage in case one aquifer is more impacted than another. In addition, the firm capacity of the system (with the largest well out of service) will be considered in the future Class EA and design of additional water supply.

The implication is a statement of confidence that at least one aquifer will not be as impacted as the other and will still be able to service several thousand residential units as well as commercial and industrial enterprises. However, but there is no guarantee when it comes to the changing climate. Snow cover locally has been steadily declining. According to the MNR in a study covering 1980 to 2010 .. *"The rate of change observed in the annual maximum SWE (snow water equivalent) in watersheds with significant negative trends ranged from -1.2 to -2.0 mm per year, averaging -1.7 mm. These rates are associated with a 36 to 60 mm change in 30 years, which is 5 to 10% of the annual precipitation in those watersheds.*
Ontario_Seasonal_Snow_Cover_Trends (kawarthaconservation.com)

Confirmed by the Government of Canada
"Overall, snow cover duration has decreased across most of Canada over recent decades. The number of days per season with snow cover has decreased by 5% to 10% per decade across most of Canada and during most seasons from 1981 to 2015. These decreases are due to later snow cover onset in the fall and earlier snow melt in the spring as a result of warming trends

across most of Canada. This warming is projected to continue, with decreasing snow cover duration across all of Canada in fall and spring…

…Snow water equivalent decreased by 5% to 10% across much of Canada from 1981 to 2015. Areas with declining snow water equivalent include the Maritimes, southern Ontario and northern Canada…
Areas of Canada that experience significant decreases in snow water equivalent may see a decrease in water availability.
Changes in snow depth - Canada.ca

Drought conditions have persisted at times throughout the area for years. This year, there have been more reports of area wells going dry. Moreover, the aquifers are connected to other surrounding ground and surface water sources such as Baxter Creek (confirmed by hydrogeologists) and the Cavan wetland complex. Will the impact of compromised aquifers to adjoining surface and groundwater features become part of the investigation?

Re: Question No. 12

Wouldn't completing a requisite watershed plan and water budget first before any future development is permitted then provide a measure of water safety and security and sustainability?

Answer

The City of Peterborough has been undertaking a watershed plan which includes some parts of the Township of Cavan Monaghan. The final report and presentation is planned for 2023. The findings from this watershed plan may help with the future Class EAs and design projects related to water supply.

This doesn't answer the question especially since the ORMCP mandates that a watershed plan be completed, as does the Peterborough County Official Plan and the PPS. Isn't the precautionary principle of outmost importance when it comes to water safety and security?

The new developments within the Township of Cavan Monaghan were mandated by the Province of Ontario and outside of the Township's control. Development requirements are determined by Planning Act and associated

Minister's Zoning Orders (MZO's) which bypass the local re-zoning process. The Township was mandated to
comply with the new growth allocations.

MZOs are being challenged, investigated and under review. It makes no sense to direct growth allocations with infrastructure and servicing NOT in place first including water safety and security. As noted below other areas in Ontario such as Halton Hills are now laying pipelines to Lake Ontario for new housing.

'The key to it all is water'

Halton Hills has had a massive housing development in the works for more than a decade called Vision Georgetown. The plan will add about 8,000 housing units and twice as many people to more than 400 hectares of land between 10 and 15 Side Roads, and Trafalgar Road and Eighth Line.

Mayor Ann Lawlor said the town is unlikely to see a shovel in the ground on this project for another two years.

"The key to it all is water," said Lawlor, whose town currently holds the record as the worst-performing municipality for housing starts in Greater Toronto, recording five per cent of its assigned goal of 697 housing starts for the year.

The existing stock of Halton Hills' 21,000 homes are supplied by groundwater aquifers, which have limited reserves. **Halton Region is laying a piping system to draw water from Lake Ontario for new housing**. Water and wastewater infrastructure won't be available for Vision Georgetown until 2025 with construction expected to start toward the end of that year.

"One of the key constraints for the actual start of construction of housing is that we need operating fire hydrants within the subdivisions to ensure that life safety and property safety are maintained," the town's chief administrative officer Chris Mills told a council meeting in September.

Lawlor said she's relayed the town's challenges in meeting Ontario's annual targets to the housing ministry as well as concerns about losing funding.

"It takes years to build these things," she said. "It's not just the money but the capacity and time to actually build. Otherwise you've just got houses in the middle of a field
… **Doug Ford asked 50 municipalities to build housing to get cash. Were they set up to fail?**
https://www.thestar.com/news/gta/doug-ford-asked-50-municipalities-to-build-housing-to-get-cash-were-they-set-up/article_4fbbc162-eba8-535f-83a6-781f468b6ded.html#tncms-source=login

Re: Question No. 15

Have the combined requirements of
Kawartha Downs and Millbrook been
investigated?

Answer

Kawartha Downs is outside of the service area boundaries concerning this Master Servicing Study (MSS). The
requirements for the Millbrook area are being studied as part of the MSS. The projected requirements for
Millbrook were discussed at the Public Information Centre (PIC) which occurred on June 21st, 2023, and more
detailed information on development in Millbrook will be available to the public when the MSS is published.
Township has secured a property on King St. for possible future well (for further hydrogeological investigation),
and the Township owns property on Syer Line. So there are several options for the future test well and
hydrogeological investigations. These will be considered further in the future Water Supply Class EA, after the
MSS. It would be beneficial to the Township if the Millbrook wells are supplied by 2 different aquifers (this allows
for not just well redundancy but aquifer redundancy as well).
The industrial complex at 1066 Syer Line is not anticipated to require 60,000L of water/day as result of changes in
the proposed users.

Why is the Kawartha Downs development being excluded since the hydrological assessment for this large development recommended the use of the Syer Line well which is being considered for servicing of Millbrook? The developers have also purchased the property on Moore Drive as a potential water source and is likely the same aquifer found on the Syer Line property. So although *'outside the 'service area boundaries concerning this MSS'* the inclusion of the water servicing intent of Kawartha Downs since it overlaps the potential water servicing of Millbrook is of great importance.

What criteria was used to make the decision to purchase the King Street property to add another well when it has been indicated the need to find another water source? What is the expectation of how many litres of water will be pumped out daily from this 4th well? Will this well become part of the hydrological assessment? It is located adjacent to the proposed Turner Street development.

The hydrological report for 1066 Syer Line placed severe limitations on water usage. Although there has been a change in users, what guarantees are there "In summary, there is ample proven supply for industrial uses that do not require process or washing water across the site." ?

Re: Question No. 20

Will the phosphorus effluent limit in Baxter Creek be maintained for the cumulative development applications in Millbrook as well as the Kawartha Downs development in Fraserville?
If so, how will this be accomplished?
How will it be monitored?

Answer

Unfortunately, the Township cannot comment on Kawartha Downs or other development applications outside
the current and future Millbrook Urban Settlement area as they are not/will not be serviced by the Millbrook
WWTP.

The Kawartha Downs development must be included because of the cumulative impact to Baxter Creek, the Otonabee River as well as Rice Lake. It is stated in answer to Question No. 22 that an Assimilative Capacity Study (ACS) on Baxter Creek is currently ongoing - that needs to include Kawartha Downs.

Re. Question No. 23

Will there be an Environmental Impact Study (EIS) that will investigate the cumulative impact of stormwater management plans and lower levels in Baxter Creek will have on trout populations?

Answer

The answer states that currently, "*in Fall 2023 and Winter 2024, a Benthic survey (outside of the MSS) is being completed to assess aspects of the health of Baxter Creek. This study will support the Assimilative Capacity Study (ACS) (which will be considering temperature as a parameter) and both will inform Ministry of Environment, Conservation and Parks (MECP) on what would be acceptable effluent criteria to suit Baxter Creek*," yet at the same time states that "*Ultimately, Stormwater management is not within the scope of this MSS – this is also noted as a response to Question No. 26*"

One answer contradicts the other. Is there a contingency plan for excess overflow caused by either climatic, mechanical, or other conditions? If not, why not? since it has been established that current stormwater outflow has already been raising the temperature of Baxter Creek as reported by Trout Unlimited putting, what this organization considers one of the best coldwater trout stream in Ontario, in jeopardy as well as compromising outflow from the WWTP.

Re: Question No. 36 and 37

It appears the proposed CSU wastewater treatment plant and its capacity has been excluded? If so, why has it been excluded?

Will the loading study presently apparently currently being conducted on Baxter Creek include the anticipated discharge from the CSU development?
Will that study be released to the public

Answers

Answer No. 36 states: *The CSU development application proposed that they could build their own plant if connecting to the Millbrook*
plant was not viable, further discussions between the developer and the Township will determine if constructing another plant is viable. The answer provided also notes to refer to the Answer to Question No. 24 - *It is possible for the public to participate in the review of the planning process in the CSU development application.* This answer implies that it is up to members of the public to register concerns about an additional WWTP to be constructed in the core of Millbrook?

Answer No 37 *…. The Assimilative Capacity Study (ACS) is currently being completed, in parallel, but outside of the MSS scope of*
work. The ACS will advise how much more of certain pollutants the Baxter Creek can assimilate without detrimental impacts. Why is the ACS outside the scope? Again, why isn't the "big sustainable picture' being considered as the most important factor?

Re: Question No. 40

What is the anticipated decrease in stormwater and groundwater flow by the

implementation of the sump pump disconnection program and how many households will be affected?

Answer

The Township is currently conducting an inventory of illegal sewer connections in the Township and determining alternative solutions for those affected by this by-law. Further questions on this by-law are best directed to the Township as this MSS project, which focuses on water and wastewater servicing, has no affiliation with the Township's stormwater management and stormwater inventory or alternative assessment as related to this bylaw.

Stormwater management, which is being excluded in the MSS, has an impact on Baxter Creek and management of the WWTP. However, it is also stated in the answer - *Should the results be relevant and available in time for the future Millbrook WWTP Expansion Schedule C Class EA, the forecasted flows and capacity calculations can be updated to suit…* One answer contradicts the other .. and shouldn't the results of the Township investigation as well as stormwater flow management and future stormwater plans be considered first before any Class EA is undertaken?

Nikash Persaud

To: Rika Law
Subject: RE: Master Servicing Study - Cavan Monaghan

From: [redacted]
Sent: Monday, February 19, 2024 11:08 AM
To: Rika Law <rlaw@rvanderson.com>
Cc: [redacted]; [redacted]
Subject: Master Servicing Study - Cavan Monaghan

Hi Rika:

The Vargas and CSU development applications are coming forth for public comment at the February 20th Council meeting. The staff reports included on the agenda contain information based on the 'completed' Master Servicing Study.

At the July 2023 public information meeting, it was stated that study would be made available to interested persons.

Could you please send us a copy of the completed Master Serving Study.

Thank you in advance,

[redacted]

Nikash Persaud

From: Dania Chehab
Sent: February 20, 2024 5:24 PM
To: [redacted]
Cc: Rika Law; Nikash Persaud; Wayne Hancock
Subject: RE: Master Servicing Study - Cavan Monaghan
Attachments: MSS Council Presentation Follow-Up Questions ; 205371-20240220 - Thompson+Zednik Response 2.pdf

Categories: Filed by Newforma

Hi [redacted]

Thank you for your email – Rika shared this with me.

I hope to address your concern about the Master Servicing Study (MSS) completion. The MSS is generally complete; however, you are correct in that it will be provided and made available for review by interested parties. The Notice of Completion is planned to be issued in the coming weeks, along with the final MSS report. We confirm that you are both on the circulation contact list and will directly receive a copy of the MSS Notice of Completion along with link to view the report once published.

We have also enclosed project correspondence regarding your follow up questions. As the MSS is a high-level document, additional investigations and studies would need be completed in the future for many of the projects identified in the MSS. To meet the Environmental Assessment Act, these studies would need to be completed before proceeding to construction. We encourage your continued participation through these future studies.

Many thanks,

Dania

Dania Chehab, P.Eng., M.Eng., ENV SP (she/her)
Project Manager, Water & Wastewater

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300, Toronto ON M2J 4Z8
t 416 497 8600 ext. 1456
LinkedIn | Facebook | Website

From: [redacted]
Sent: Monday, February 19, 2024 11:08 AM
To: Rika Law <rlaw@rvanderson.com>
Cc: [redacted]
Subject: Master Servicing Study - Cavan Monaghan

Hi Rika:

The Vargas and CSU development applications are coming forth for public comment at the February 20th Council meeting. The staff reports included on the agenda contain information based on the 'completed' Master Servicing Study.

At the July 2023 public information meeting, it was stated that study would be made available to interested persons.

Could you please send us a copy of the completed Master Serving Study.

Thank you in advance,

[redacted]

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300
Toronto ON M2J 4Z8 Canada
T 416 497 8600 **F** 855 833 4022
rvanderson.com

RVA 205371

February 20, 2024

[redacted]

[redacted]

Dear [redacted]

Re: Township of Cavan Monaghan Water and Wastewater Master Servicing Study (MSS)
Response to MSS Council Presentation Follow-Up Questions

Thank you for your comments regarding the Township of Cavan Monaghan Water and Wastewater Master Servicing Study (MSS) project.

The Water and Wastewater MSS is a high-level infrastructure planning process that is focused specifically on municipal water and wastewater infrastructure services required to support growth to 2051. Water is specific to drinking water supply and distribution while wastewater is specific to sanitary sewage collection and treatment; stormwater is not included with this MSS.

The growth referenced in the Water and Wastewater MSS is documented in the Growth Management Strategy (GMS), along with the rationale for land use planning. Briefly, this growth was allocated to the Township by the County of Peterborough (the upper-tier municipality) and mandated by the Province of Ontario.

As a lower-tier municipality, the Township of Cavan Monaghan is not designated as responsible for activities related to watershed planning and subwatershed studies under the Oak Ridges Moraine Conservation Plan (ORMCP). This responsibility is designated to upper-tier and single-tier municipalities. In the case of Baxter, Squirrel, and Cavan Creeks, the upper-tier municipality is the County of Peterborough.

As the Water and Wastewater MSS was completed as a high-level infrastructure planning document, many of the projects identified through the MSS are subject to additional studies and investigations before proceeding to implementation. These additional studies and investigations are required to fulfill regulatory requirements, such as the Ontario Environmental Assessment Act, Water Resources Act, and Environmental Protection Act.

CANADA'S BEST MANAGED COMPANIES Platinum member

We have summarized the future studies and investigations that will be completed outside of the MSS in the table below.

Infrastructure Component	Preferred Servicing Approach
Water Supply	**Increase the existing groundwater well supply through new supply wells or by increasing the draw from the existing well supply.** Additional study, including hydrogeological investigation, is required to confirm feasibility and suitability of this approach and a further Schedule B Class EA, or an Archaeological Screening Process (ASP) will be completed by the Township in the future, prior to construction.
Water Storage	**Increase water storage in Millbrook by adding an additional water storage facility in a new location.** To confirm the location, storage type and capacity of the future storage solution, a Schedule B Class EA will be completed by the Township in the future, prior to construction. **Increase the capacity of the existing Millbrook Booster Pumping Station (BPS) to service development growth near the existing standpipe.** This project is exempt from the Class EA process and can move forward immediately to the design/implementation phase.
Wastewater Treatment	**Increase wastewater treatment capacity in Millbrook by expanding the Millbrook Wastewater Treatment Plant (WWTP).** The Township will complete a future Schedule C Class EA to confirm feasibility, treatment technology, and footprint requirements for this expansion. An Assimilative Capacity Study (ACS) will also be completed to inform the future Schedule C Class EA and environmental approvals.
Wastewater Conveyance	**Convey wastewater from the North Catchment of Millbrook via the Tupper Street SPS to the East Sewer Shed of the Millbrook WWTP.** This project is exempt from the Class EA process and can move forward immediately to the design/implementation phase.

Once again, we thank you for your comments regarding the Township's Water and Wastewater MSS. As the project is concluding, this will be the last correspondence through the MSS framework. The Notice of Completion and final Water and Wastewater MSS Report will be published in the coming weeks.

We encourage you to participate in the upcoming future studies and thank you again for your interest and participation in the MSS project.

Yours very truly,

R.V. Anderson Associates Limited
Dania Chehab, P.Eng., M.Eng., ENV SP
Project Manager
2001 Sheppard Avenue East, Suite 300
Toronto, ON, M2J 4Z8
Tel: (416) 497 8600 ext.
DChehab@rvanderson.com

Township of Cavan Monaghan, Public Works
Wayne Hancock, P.Eng.
Director of Public Works
988 County Road 10
Millbrook, ON, L0A 1G0
Tel: (705) 932 9327
WHancock@cavanmonaghan.net

Nikash Persaud

From: [redacted]
Sent: February 21, 2024 8:01 AM
To: Dania Chehab; [redacted]
Cc: Rika Law; Nikash Persaud; 'Wayne Hancock'
Subject: RE: Master Servicing Study - Cavan Monaghan

Categories: Filed by Newforma

[CAUTION EXTERNAL EMAIL] Make Sure that it is legitimate **before** Replying or Clicking on any links

Thank you Dania… !

From: Dania Chehab [mailto:dchehab@rvanderson.com]
Sent: February 20, 2024 5:24 PM
To: [redacted]
Cc: Rika Law <rlaw@rvanderson.com>; Nikash Persaud <npersaud@rvanderson.com>; Wayne Hancock <whancock@cavanmonaghan.net>
Subject: RE: Master Servicing Study - Cavan Monaghan

Hi [redacted]

Thank you for your email – Rika shared this with me.

I hope to address your concern about the Master Servicing Study (MSS) completion. The MSS is generally complete; however, you are correct in that it will be provided and made available for review by interested parties. The Notice of Completion is planned to be issued in the coming weeks, along with the final MSS report. We confirm that you are both on the circulation contact list and will directly receive a copy of the MSS Notice of Completion along with link to view the report once published.

We have also enclosed project correspondence regarding your follow up questions. As the MSS is a high-level document, additional investigations and studies would need be completed in the future for many of the projects identified in the MSS. To meet the *Environmental Assessment Act*, these studies would need to be completed before proceeding to construction. We encourage your continued participation through these future studies.

Many thanks,
Dania

Dania Chehab, P.Eng., M.Eng., ENV SP (she/her)
Project Manager, Water & Wastewater

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300, Toronto ON M2J 4Z8
t 416 497 8600 ext. 1456

LinkedIn | Facebook | Website

From: [redacted]
Sent: Monday, February 19, 2024 11:08 AM
To: Rika Law <rlaw@rvanderson.com>
Cc: [redacted]
Subject: Master Servicing Study - Cavan Monaghan

[CAUTION EXTERNAL EMAIL] Make Sure that it is legitimate **before** Replying or Clicking on any links

Hi Rika:

The Vargas and CSU development applications are coming forth for public comment at the February 20th Council meeting. The staff reports included on the agenda contain information based on the 'completed' Master Servicing Study.

At the July 2023 public information meeting, it was stated that study would be made available to interested persons.

Could you please send us a copy of the completed Master Serving Study.

Thank you in advance,

[redacted]

R.V. Anderson Associates Limited has been engaged in the provision of professional engineering, operations, and management services since 1948. This message is intended only for the use of the individual(s) to whom it is addressed. If you are not the intended recipient(s), disclosure, copying, distribution and use are prohibited; please notify us immediately and delete this email from your systems. Please see http://www.rvanderson.com for Copyright and Terms of Use.

Nikash Persaud

From: [redacted]
Sent: February 21, 2024 10:44 AM
To: Dania Chehab; [redacted]
Cc: Rika Law; Nikash Persaud; 'Wayne Hancock'
Subject: RE: Master Servicing Study - Cavan Monaghan

Categories: Filed by Newforma

[CAUTION EXTERNAL EMAIL] Make Sure that it is legitimate **before** Replying or Clicking on any links

Thank you Dania for the additional information and in particular the schedule of future studies that will need to take place prior to any construction.
[redacted]

From: Dania Chehab [mailto:dchehab@rvanderson.com]
Sent: February 20, 2024 5:24 PM
To: [redacted]
Cc: Rika Law <rlaw@rvanderson.com>; Nikash Persaud <npersaud@rvanderson.com>; Wayne Hancock <whancock@cavanmonaghan.net>
Subject: RE: Master Servicing Study - Cavan Monaghan

Hi [redacted]

Thank you for your email – Rika shared this with me.

I hope to address your concern about the Master Servicing Study (MSS) completion. The MSS is generally complete; however, you are correct in that it will be provided and made available for review by interested parties. The Notice of Completion is planned to be issued in the coming weeks, along with the final MSS report. We confirm that you are both on the circulation contact list and will directly receive a copy of the MSS Notice of Completion along with link to view the report once published.

We have also enclosed project correspondence regarding your follow up questions. As the MSS is a high-level document, additional investigations and studies would need be completed in the future for many of the projects identified in the MSS. To meet the *Environmental Assessment Act*, these studies would need to be completed before proceeding to construction. We encourage your continued participation through these future studies.

Many thanks,
Dania

Dania Chehab, P.Eng., M.Eng., ENV SP (she/her)
Project Manager, Water & Wastewater

R.V. Anderson Associates Limited
2001 Sheppard Avenue East, Suite 300, Toronto ON M2J 4Z8
t 416 497 8600 ext. 1456
LinkedIn | Facebook | Website

From: [redacted]
Sent: Monday, February 19, 2024 11:08 AM
To: Rika Law <rlaw@rvanderson.com>
Cc: [redacted]
Subject: Master Servicing Study - Cavan Monaghan

[CAUTION EXTERNAL EMAIL] Make Sure that it is legitimate **before** Replying or Clicking on any links

Hi Rika:

The Vargas and CSU development applications are coming forth for public comment at the February 20th Council meeting. The staff reports included on the agenda contain information based on the 'completed' Master Servicing Study.

At the July 2023 public information meeting, it was stated that study would be made available to interested persons.

Could you please send us a copy of the completed Master Serving Study.

Thank you in advance,

[redacted]

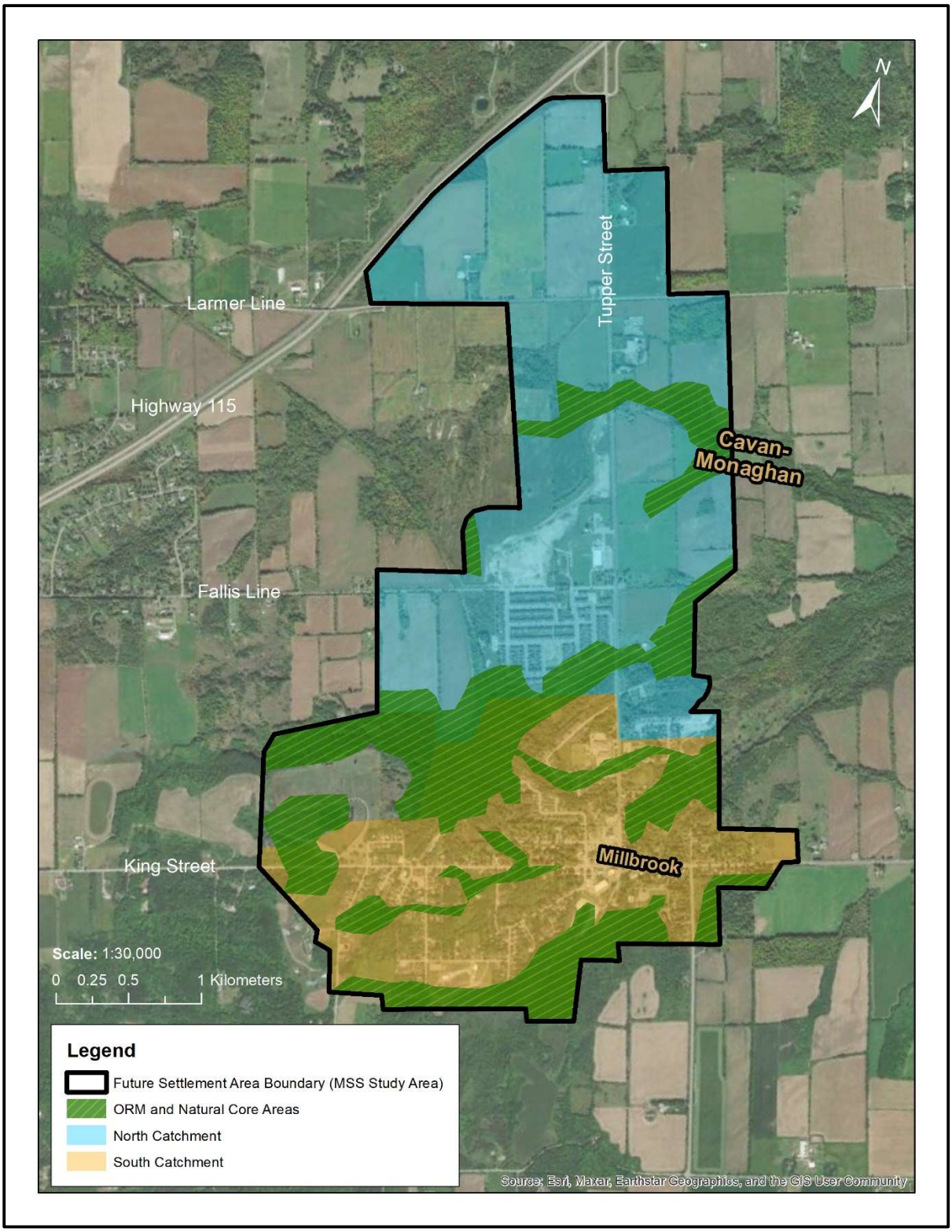
R.V. Anderson Associates Limited has been engaged in the provision of professional engineering, operations, and management services since 1948. This message is intended only for the use of the individual(s) to whom it is addressed. If you are not the intended recipient(s), disclosure, copying, distribution and use are prohibited; please notify us immediately and delete this email from your systems. Please see http://www.rvanderson.com for Copyright and Terms of Use.

APPENDIX 7

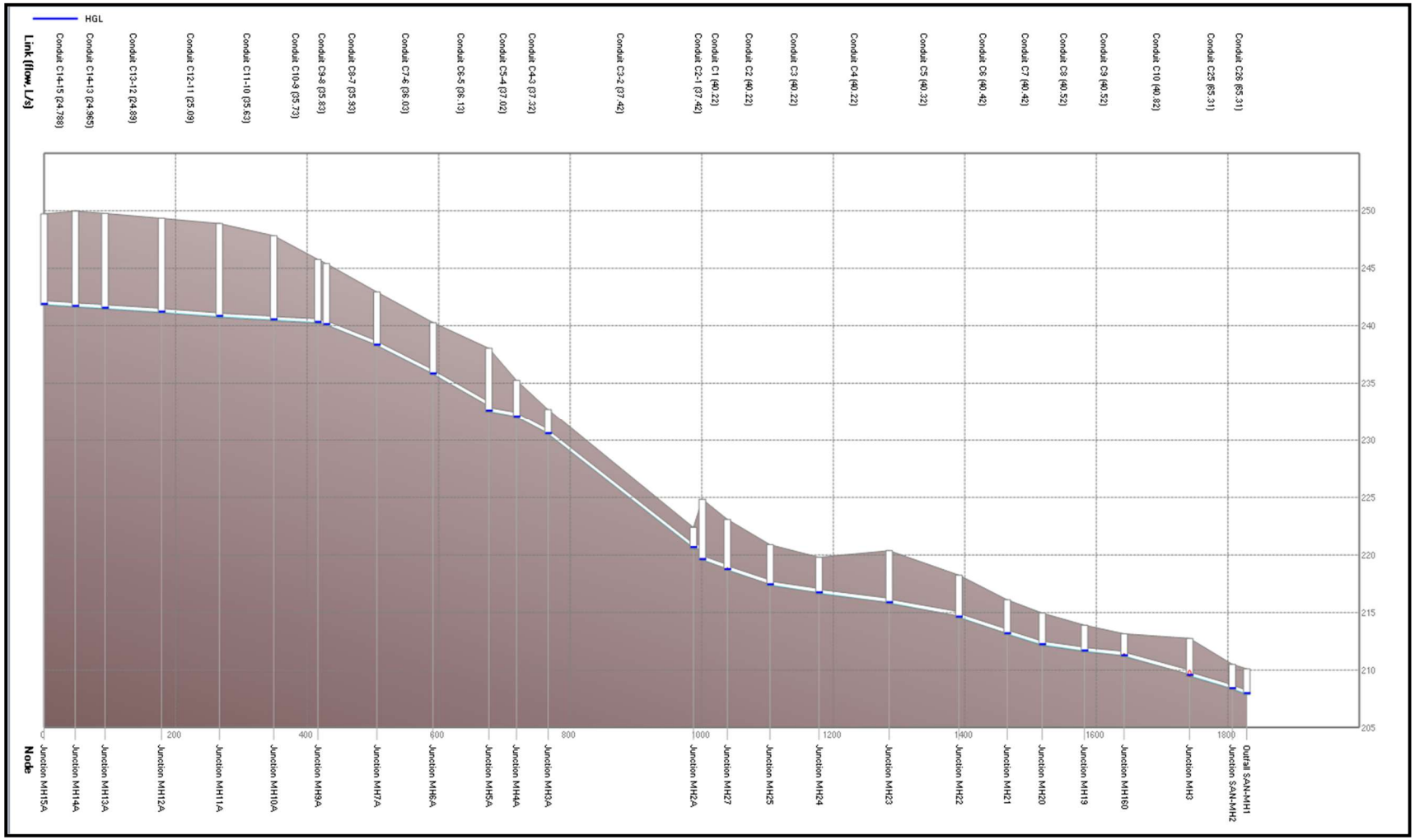
WASTEWATER CONVEYANCE MODELLING RESULTS



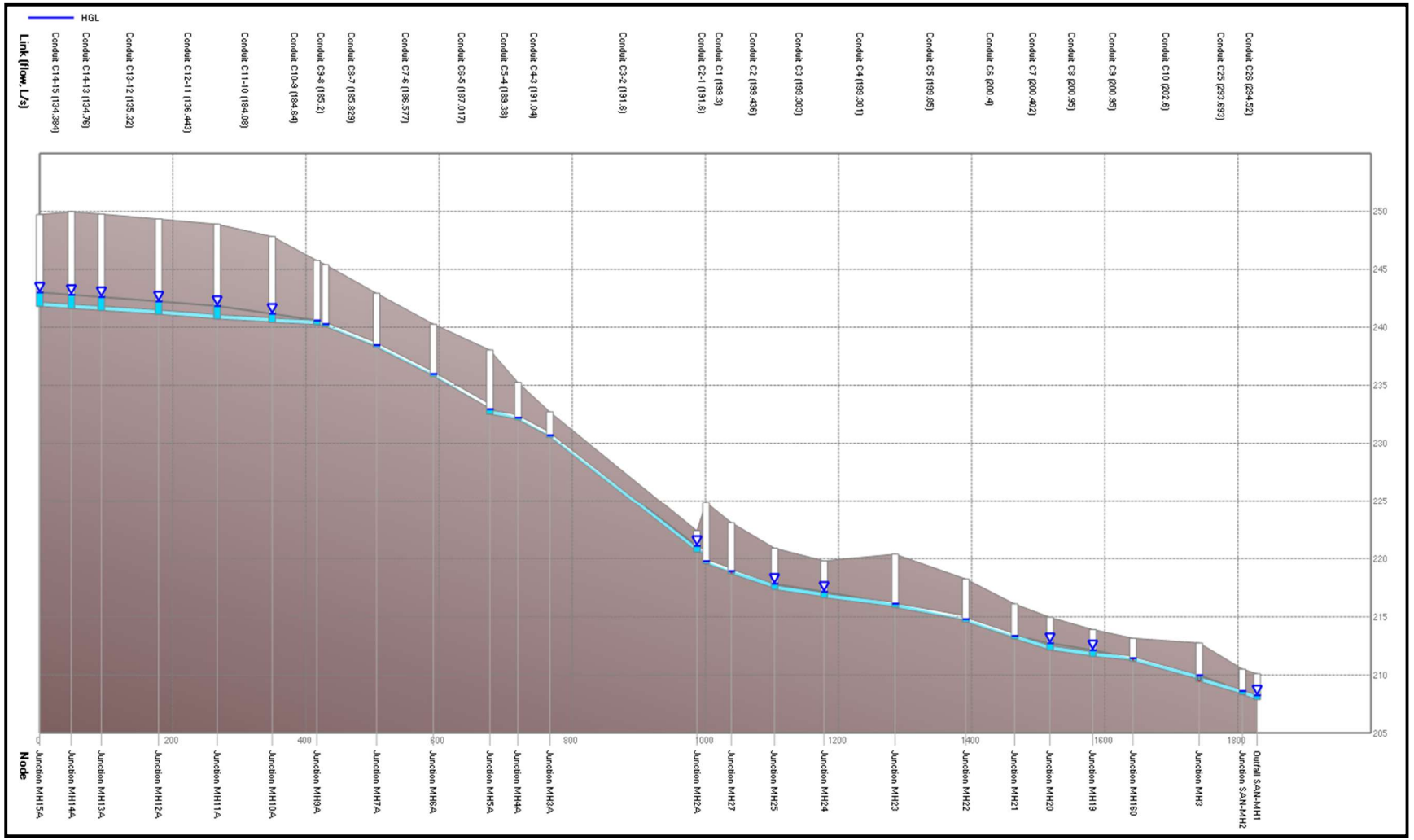
Aerial Map of Township of Cavan Monaghan: Wastewater Catchments (North & South) and Oak Ridges Moraine/Natural Core Areas



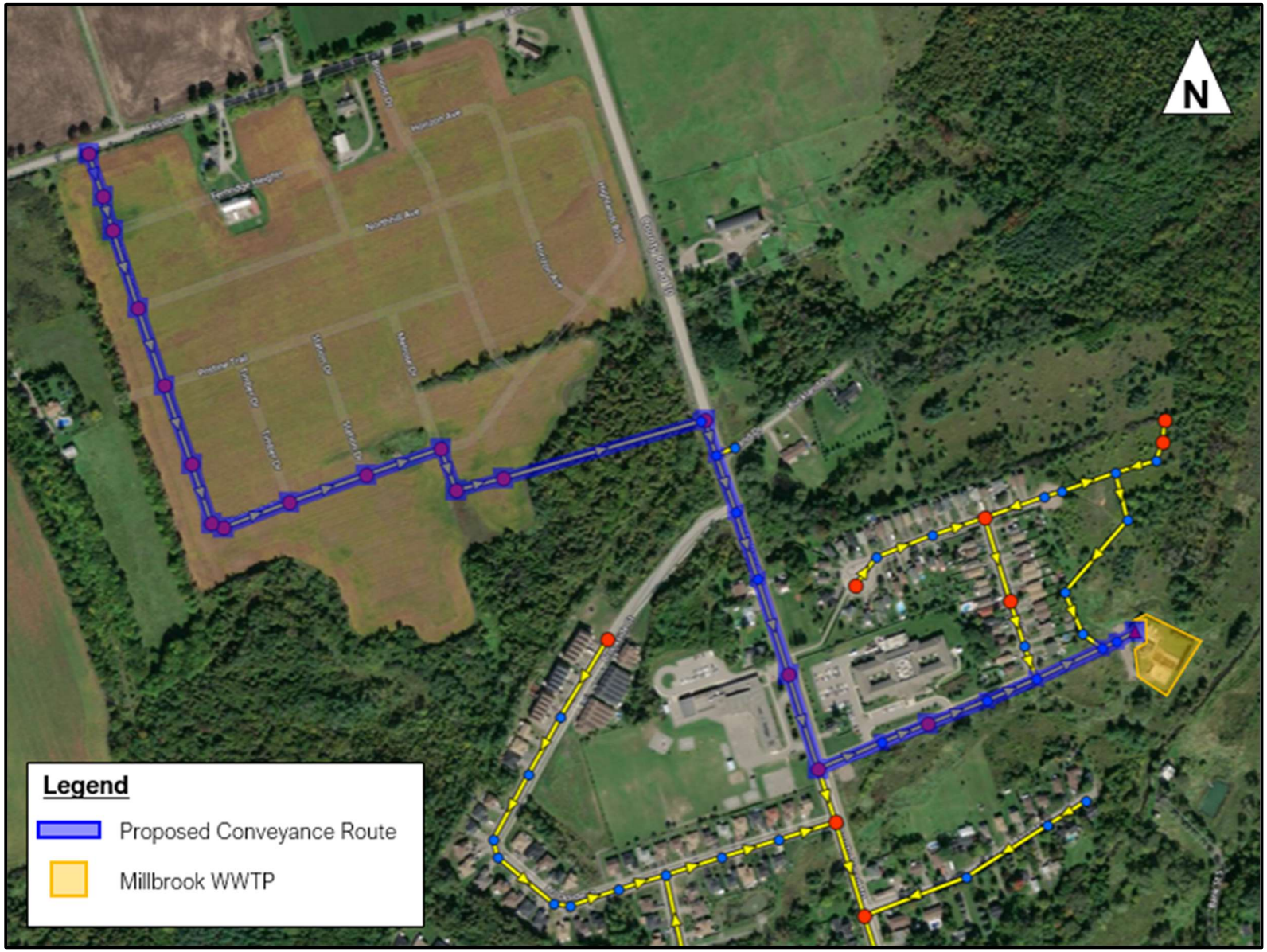
North Catchment: Alternative 2 – Convey Flow to West Sewer Shed, Dry Weather Flow (DWF)



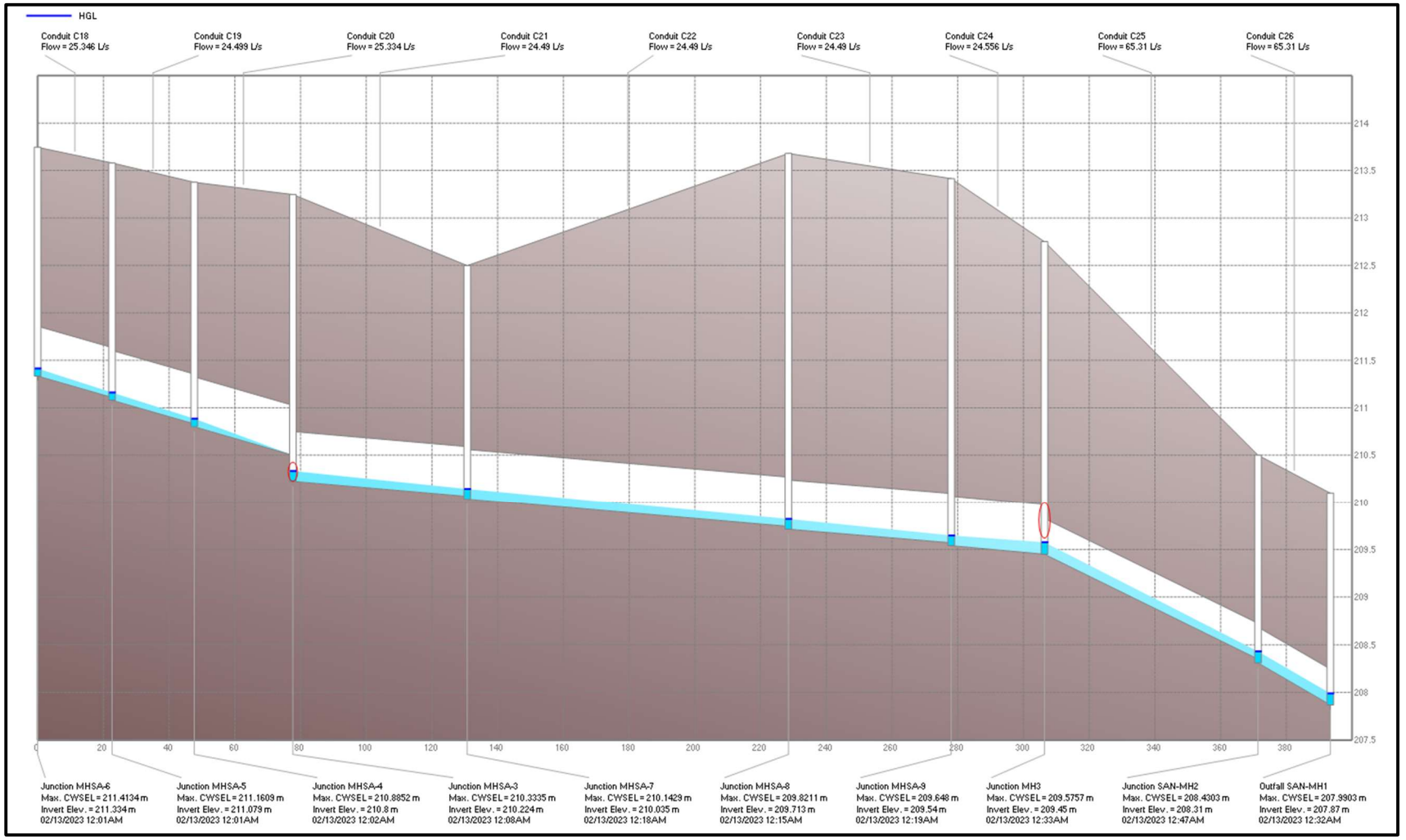
North Catchment: Alternative 2 – Convey Flow to West Sewer Shed, Wet Weather Flow (WWF)



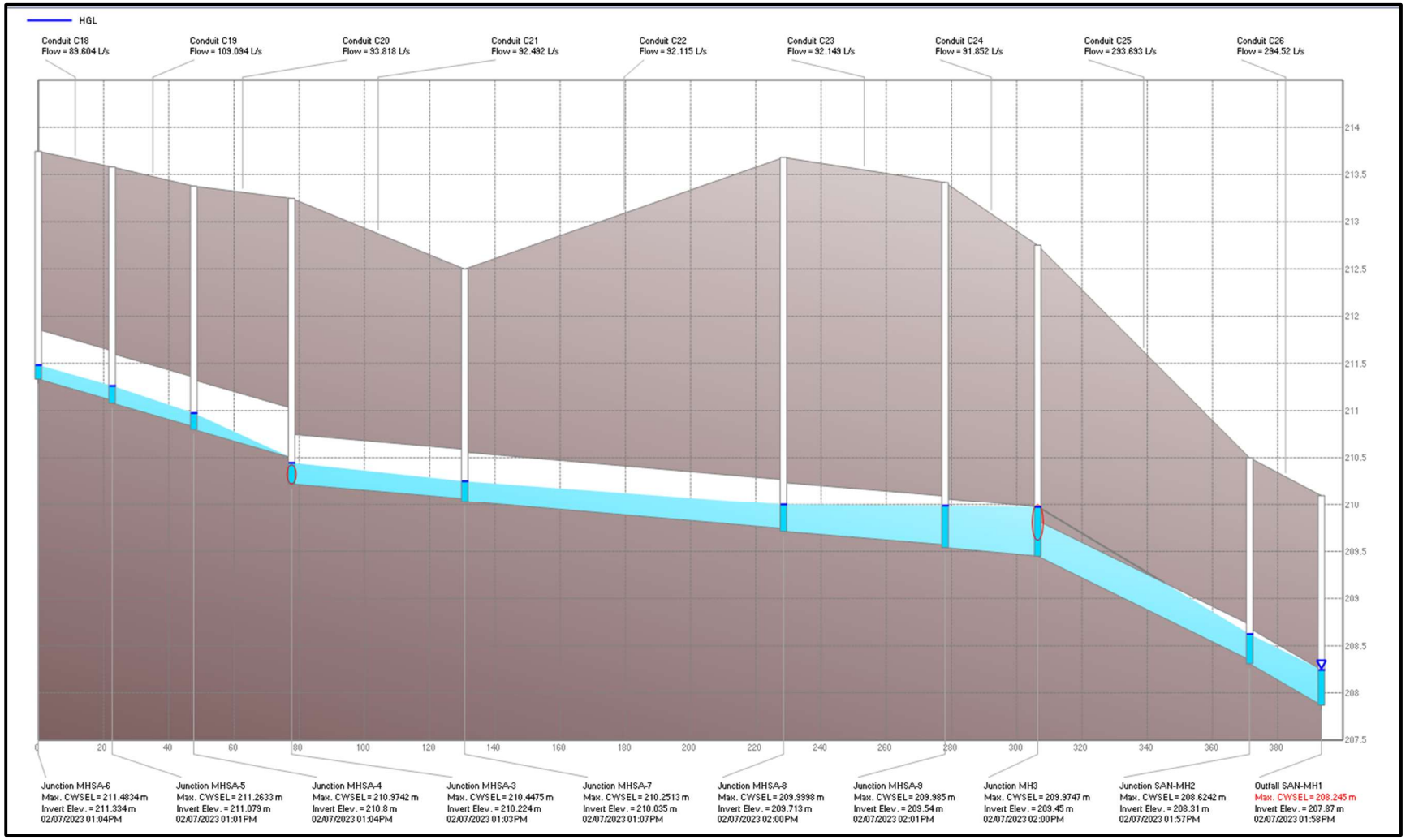
North Catchment: Alternative 2 – Convey Flow to West Sewer Shed, Proposed Conveyance Route



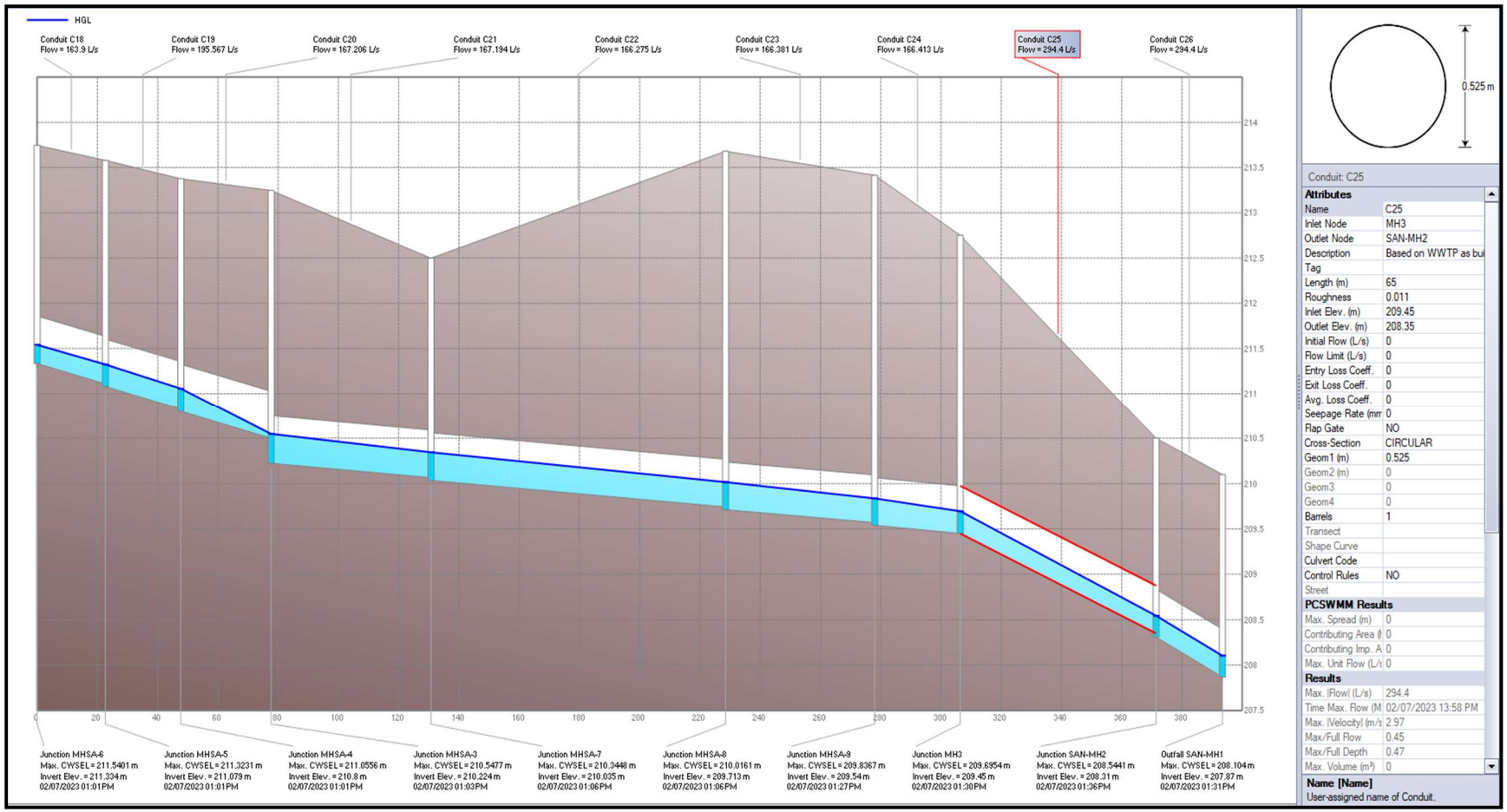
North Catchment: Alternative 3 – Convey Flow to East Sewer Shed, Dry Weather Flow (DWF)



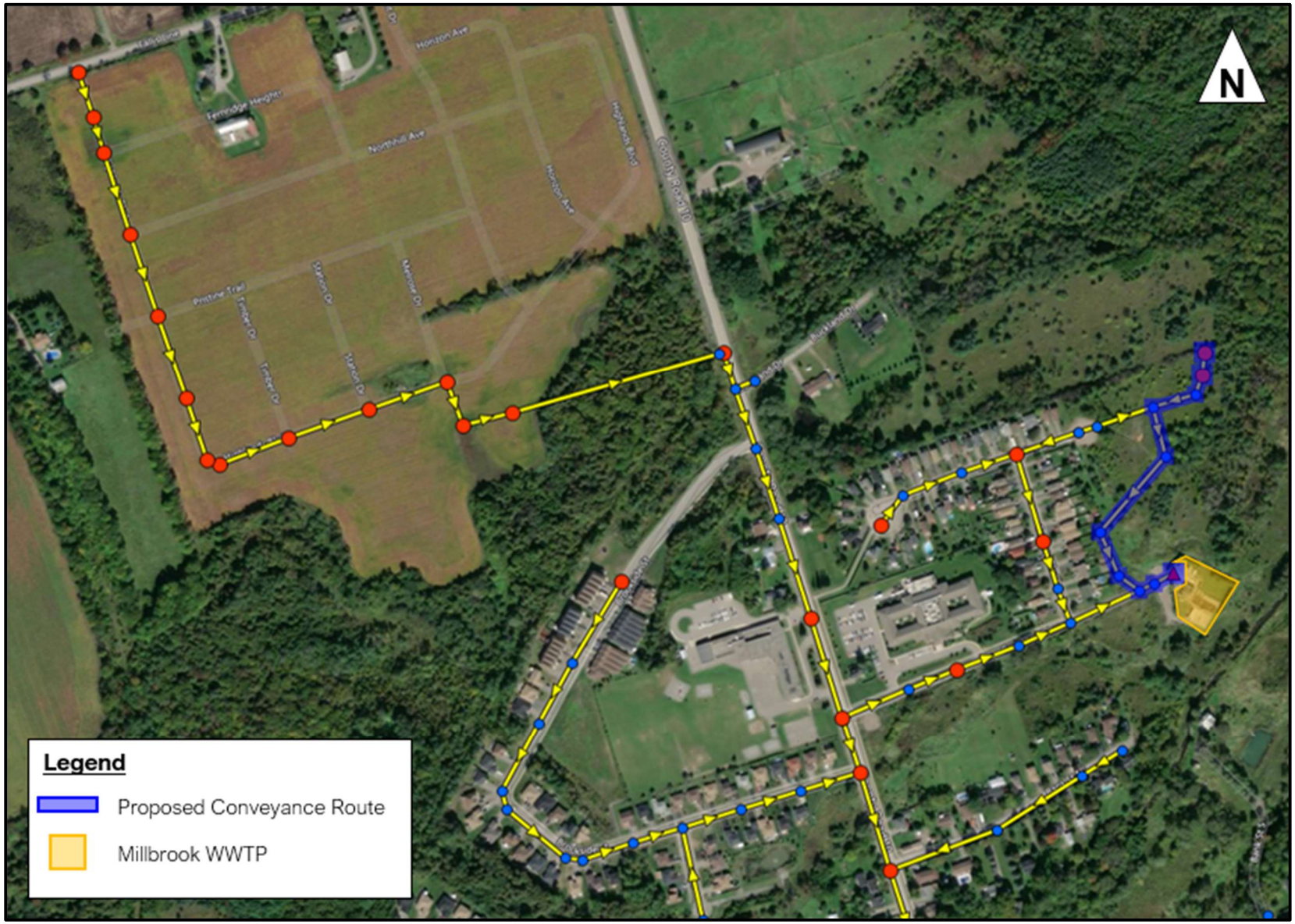
North Catchment: Alternative 3 – Convey Flow to East Sewer Shed, Wet Weather Flows (WWF)



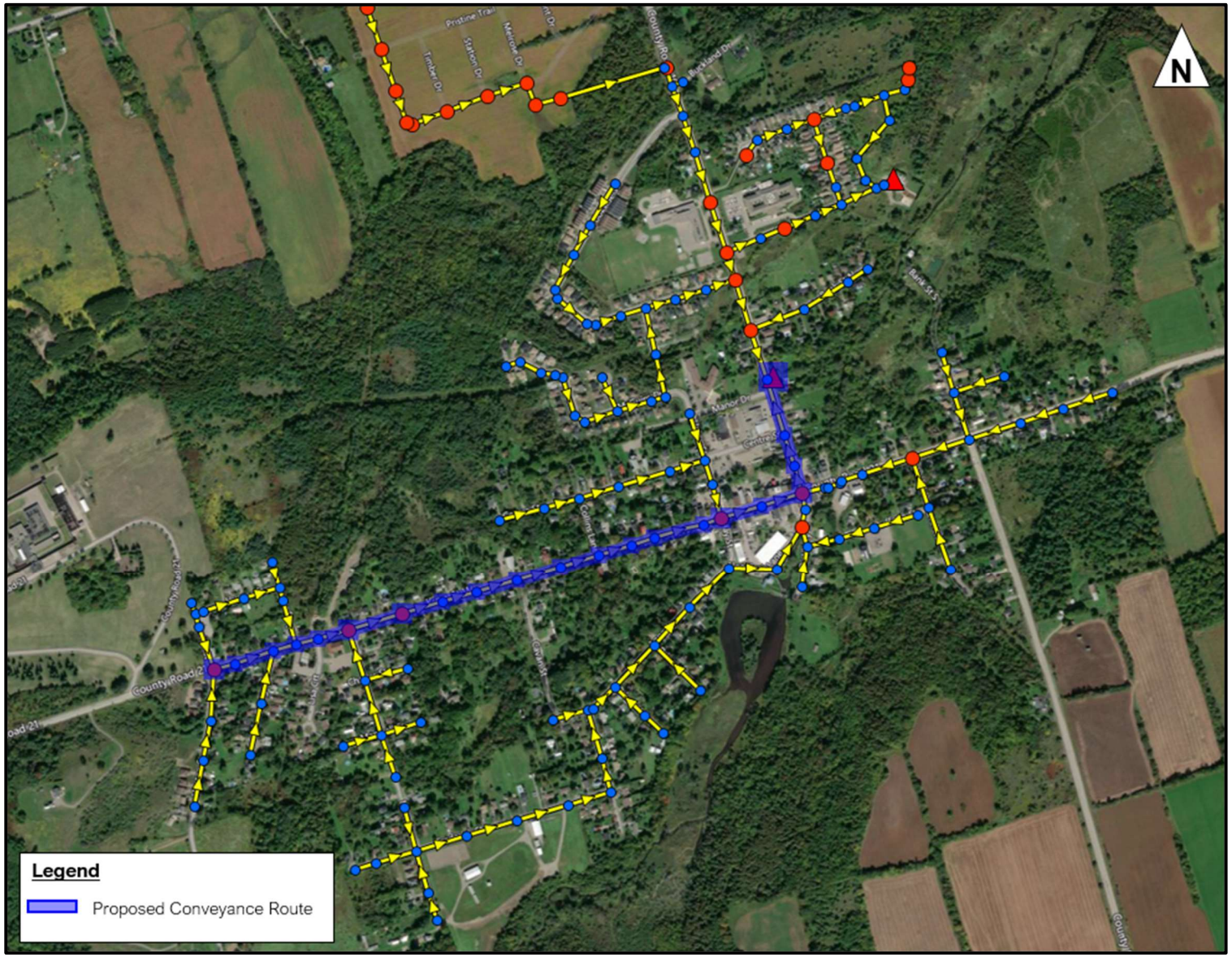
North Catchment: Alternative 3 – Convey Flow to East Sewer Shed, Wet Weather Flows (WWF) with 100m Stretch Upsized to 525mm Diameter



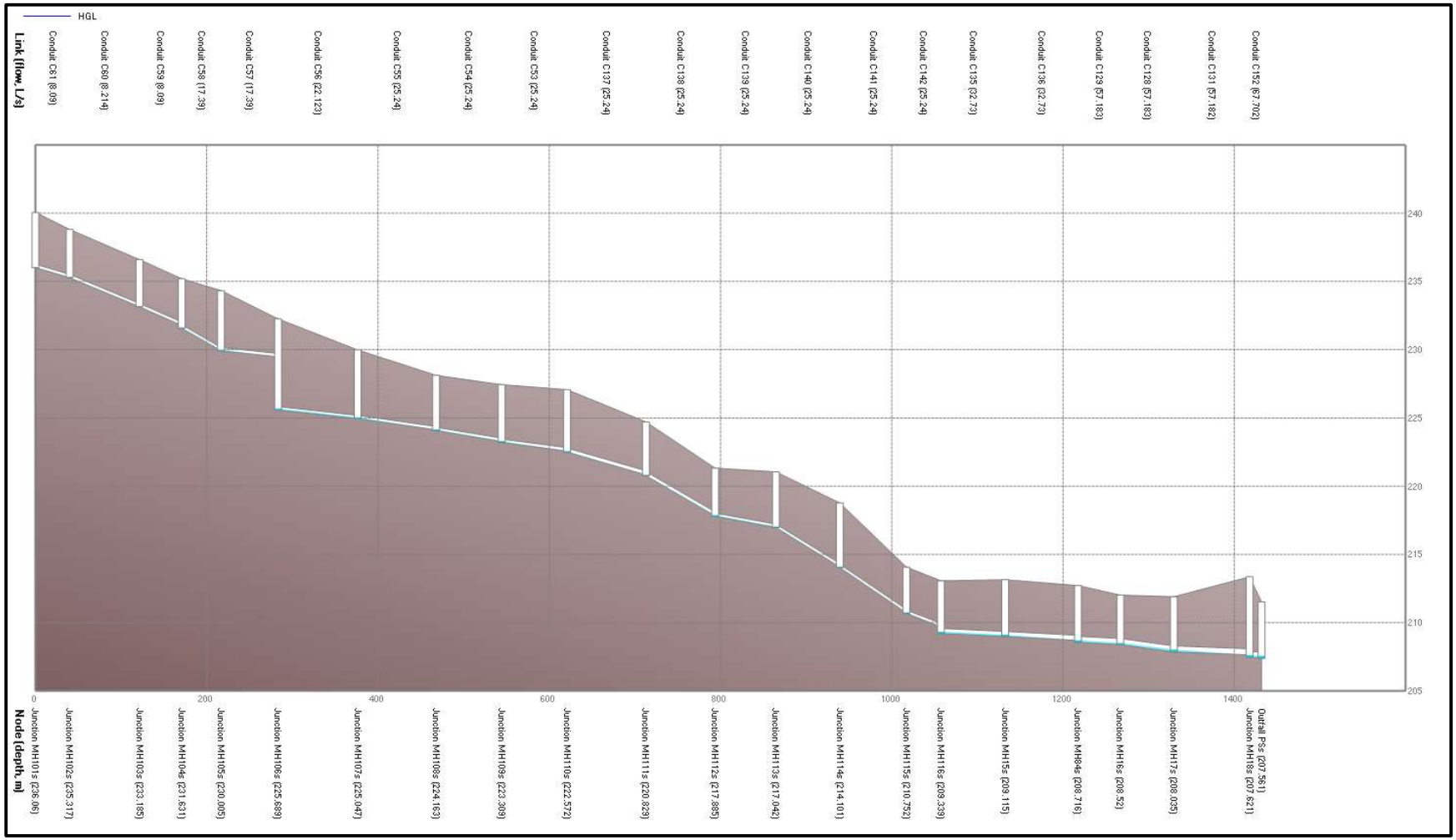
North Catchment: Alternative 3 – Convey Flow to East Sewer Shed, Proposed Conveyance Route



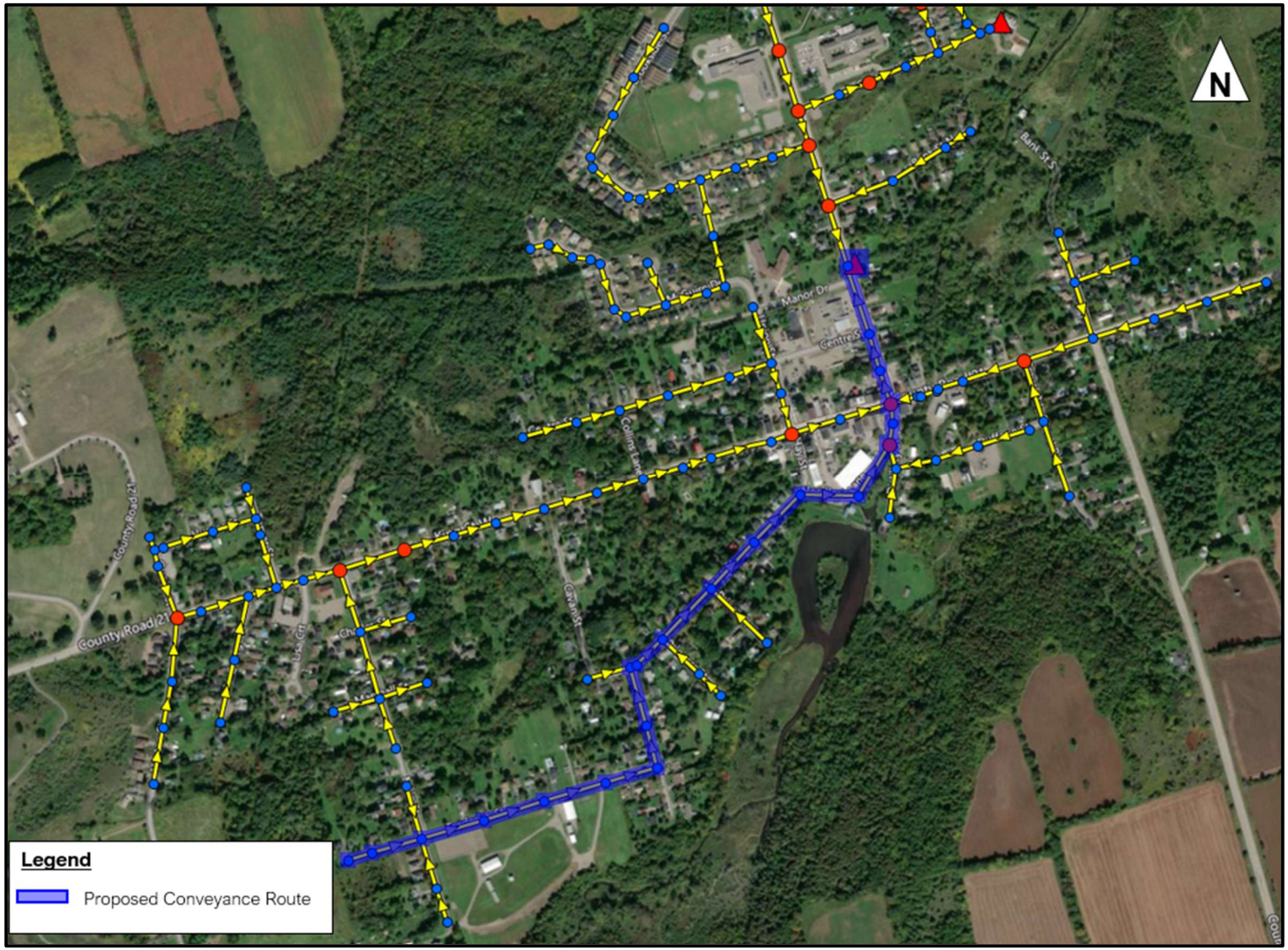
South Catchment: Profile – County Rd. 21 to Sewage Pumping Station (West Side)



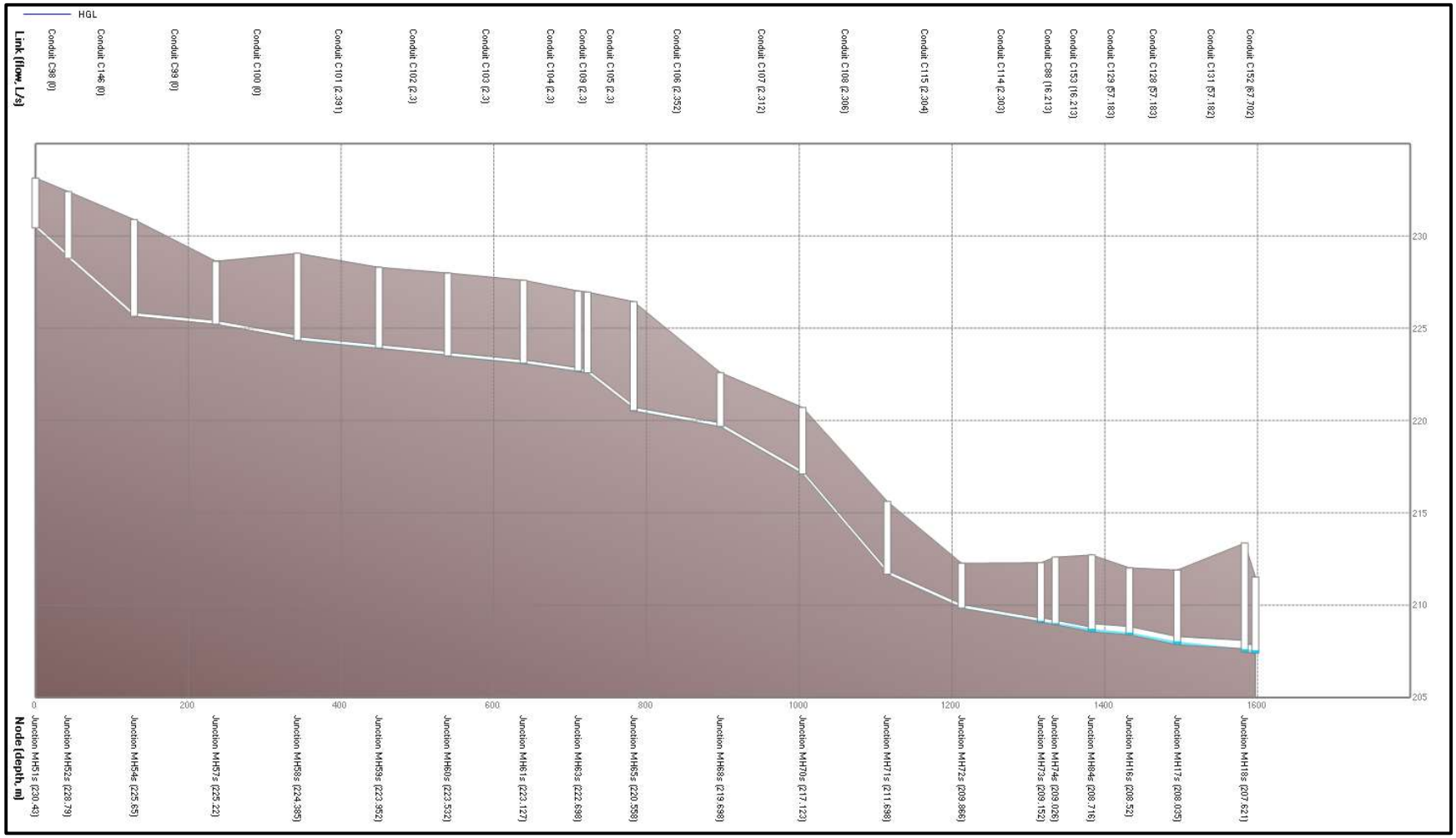
South Catchment: Profile – County Rd. 21 to Sewage Pumping Station (West Side) Profile Results



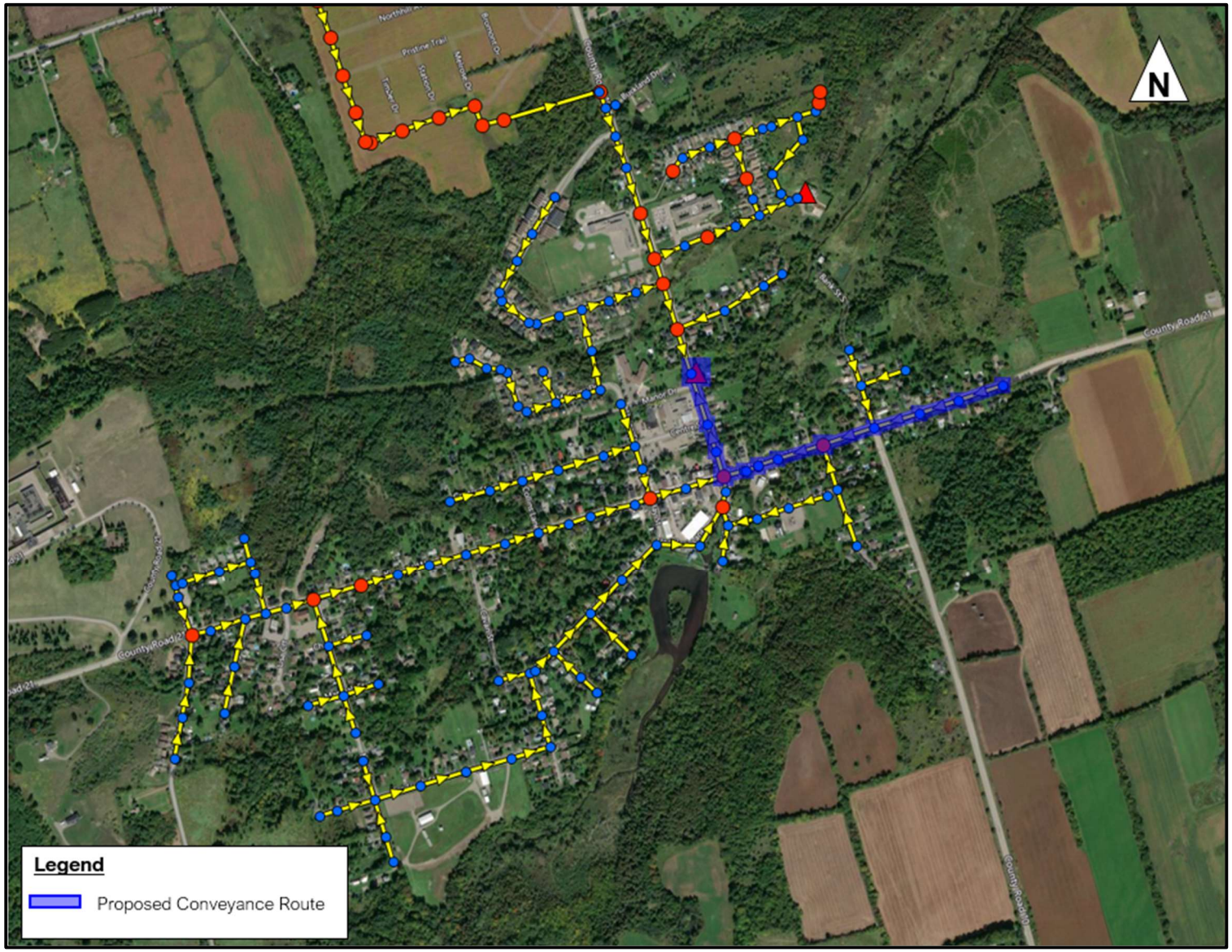
South Catchment: Profile – Frederick St. to Anne St. to Needlers Ln. to Sewage Pumping Station



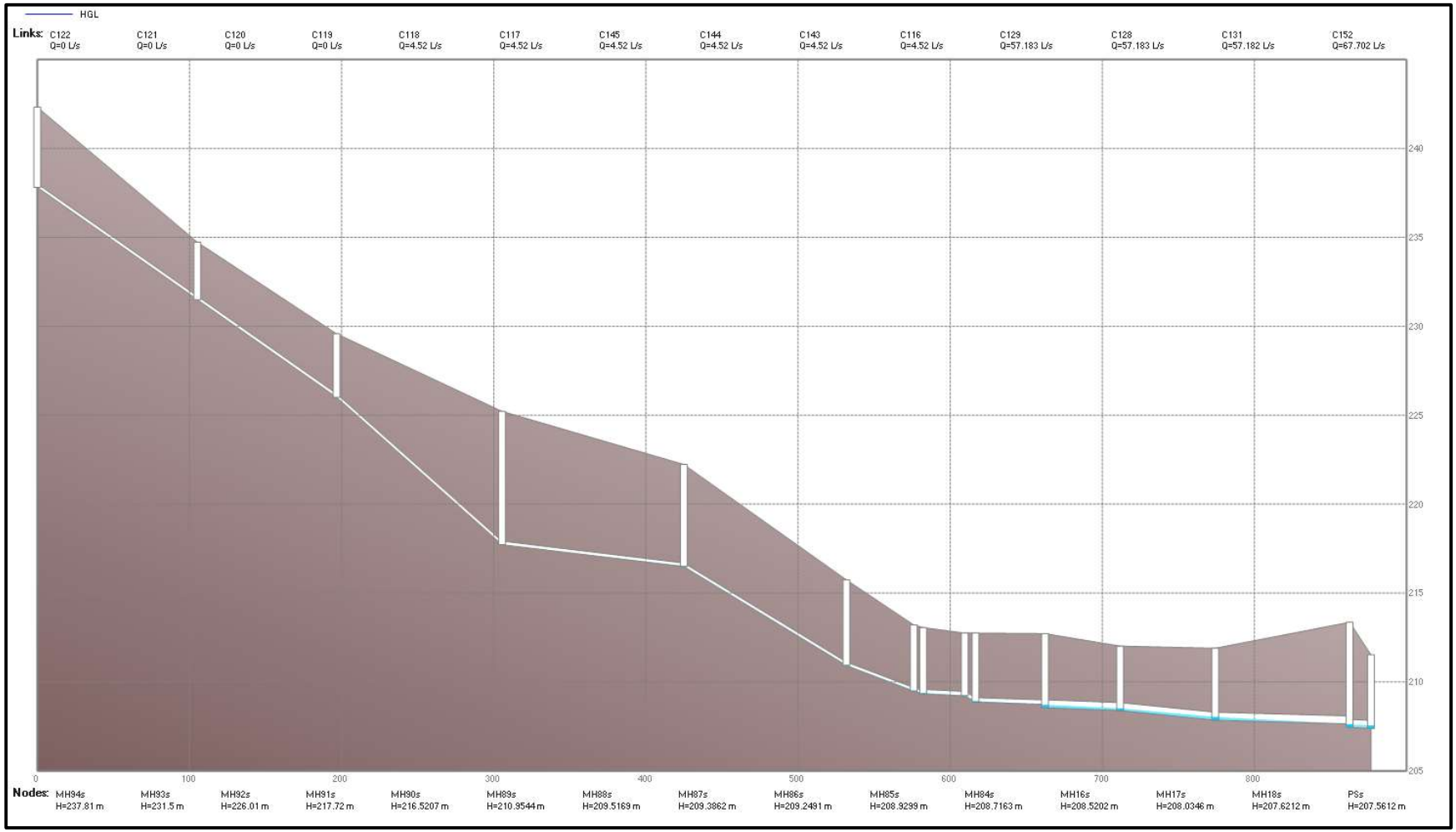
South Catchment: Profile – Frederick St. to Anne St. to Needlers Ln. to Sewage Pumping Station Profile Results



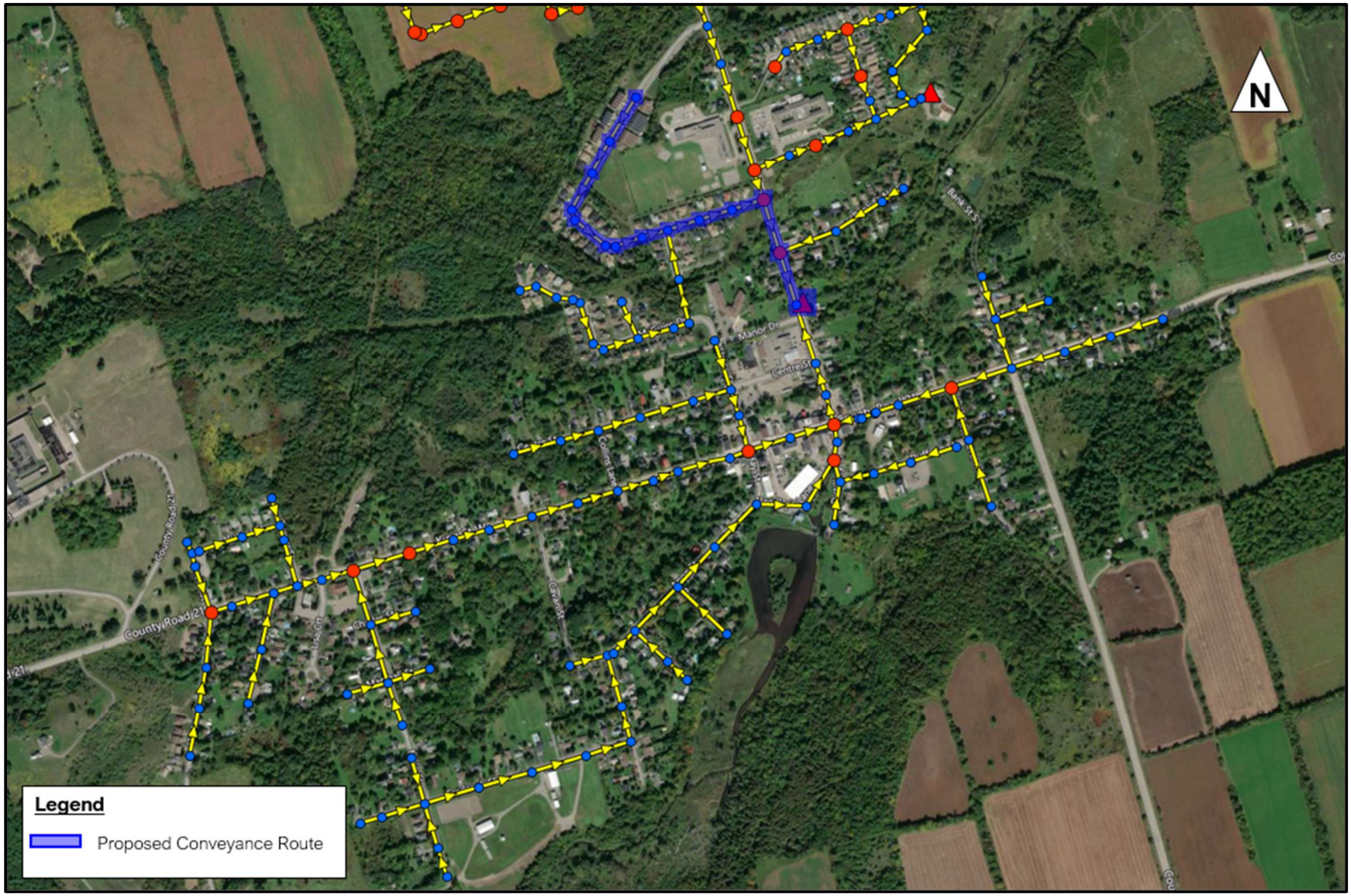
South Catchment: Profile – County Rd. 21 to Sewage Pumping Station (East Side)



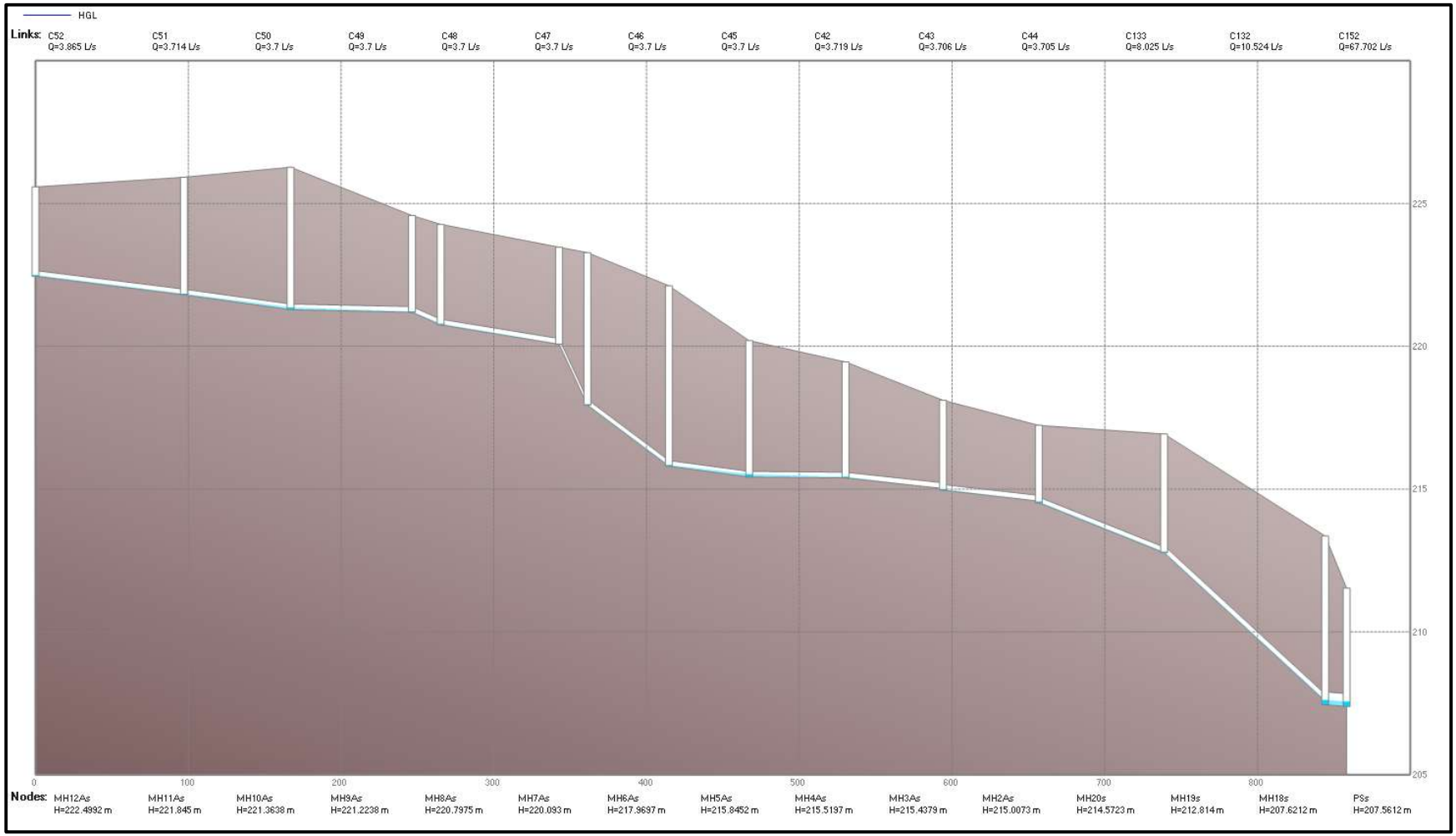
South Catchment: Profile – County Rd. 21 to Sewage Pumping Station (East Side) Profile Results



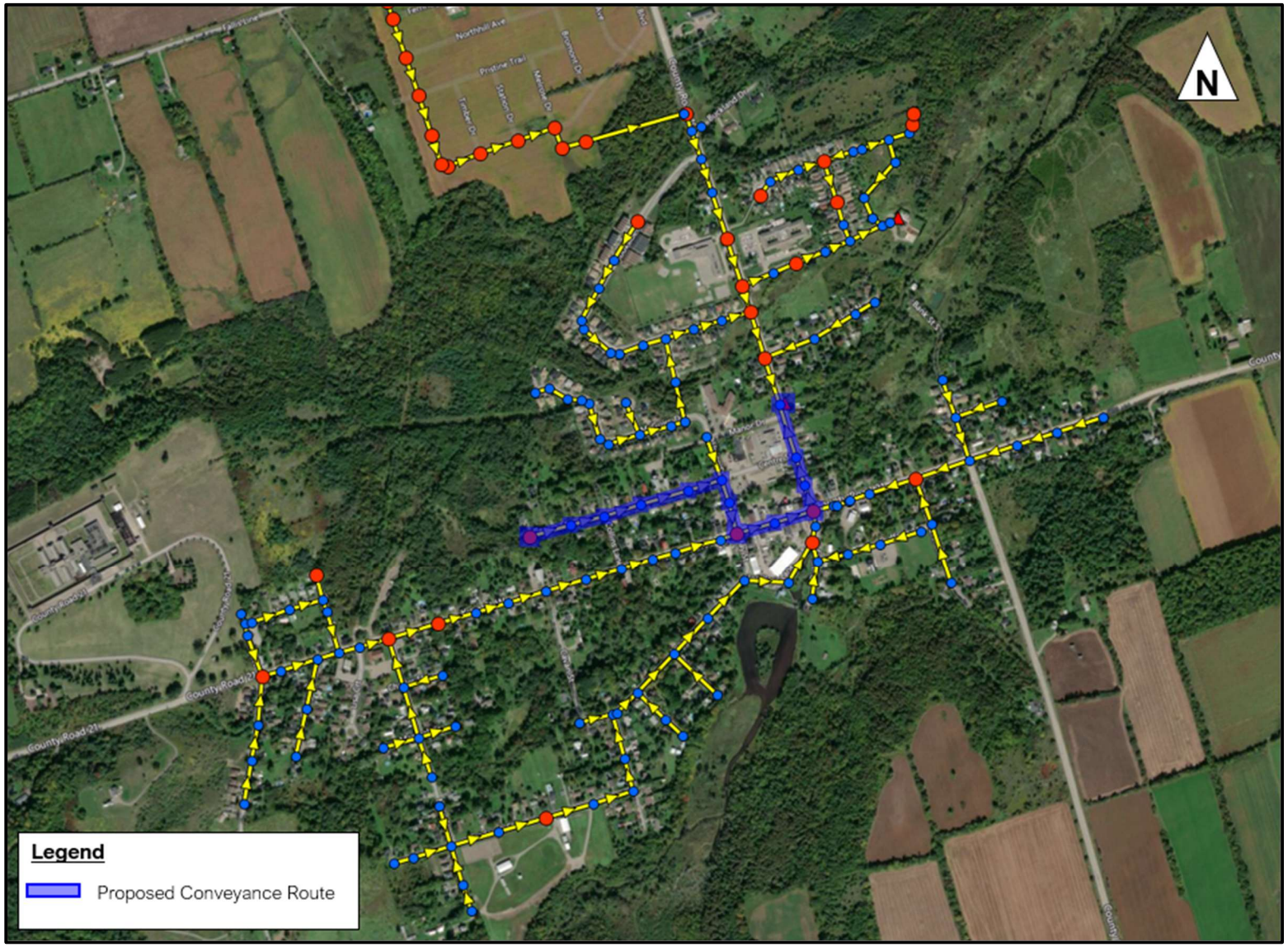
South Catchment: Profile – Brookside St. to Sewage Pumping Station



South Catchment: Profile – Brookside St. to Sewage Pumping Station Profile Results



South Catchment: Profile – Center St. to Sewage Pumping Station



South Catchment: Profile – Center St. to Sewage Pumping Station Profile Results

