Pressure District 2/3 Water Storage Tank – Municipal Class Environmental Assessment

Project File Report

City of Brantford

60660504

February 2023

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AECOM: 2015-04-13

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Revision History

Revision Number	Date	Revised By	Revision Description
-	September 2, 2022	-	Draft submitted to the City for review.
1	November 8, 2022	SZ, SC	City comments addressed and draft circulated to key review agencies.
2	January 20, 2023	SZ	Final draft submitted to City addressing key review agency comments
3	February 23, 2023	SZ, SC	Final Submitted to City for 30-day review

Executive Summary

Introduction and Background

The City of Brantford (referred to herein as City) has, through its consultant AECOM Canada Ltd. (AECOM), completed a Schedule B Municipal Class Environmental Assessment study for siting a new water storage tank to service existing and future residents in the City's Pressure District 2/3. The need for additional storage in Pressure District 2/3 was identified in the City's recent Water, Wastewater and Stormwater Master Servicing Plan 2051 Amendment.

The study has evaluated a short list of alternatives for siting a new water storage tank to address the need for additional storage within the distribution system, in addition to associated transmission watermains and modifications to existing pumping stations to meet service area demands.

The existing King George Elevated Tank is reaching the end of its useful life and requires substantial capital investment to maintain its operation beyond around 2029. The Master Servicing Plan recommended that the King George Elevated Tank be decommissioned after the new storage tank is operational.

Feasibility Study

A feasibility study was completed that identified and screened fourteen potential sites for a new water storage tank for Pressure District 2/3.

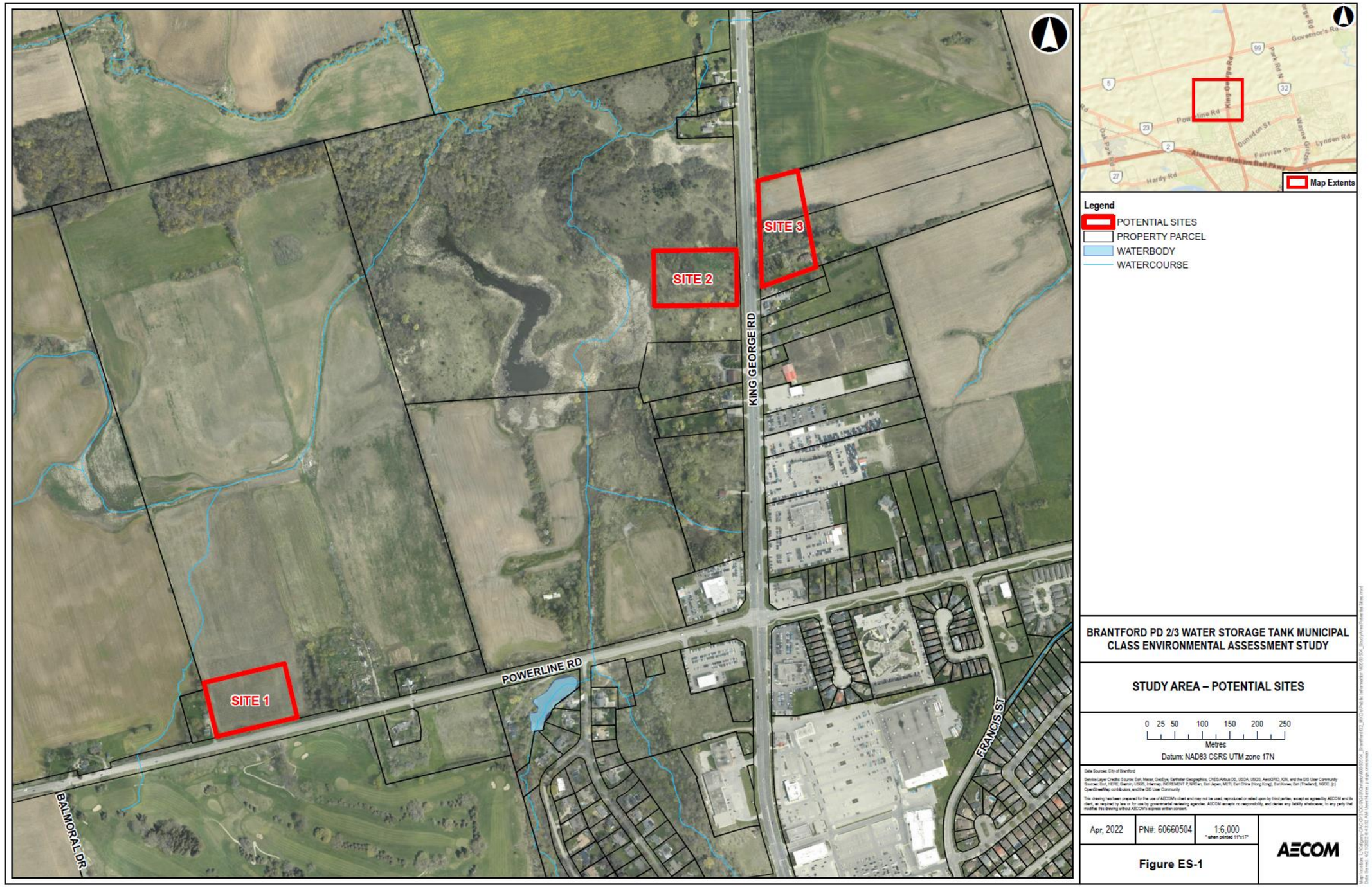
Key site identification criteria included location within Pressure District 2/3 or within a reasonable distance to existing or planned large diameter watermains, property ownership (preference for City owned, undeveloped lands and/or parks and open space), site attributes (e.g., preference for high ground elevation, minimum site size of 75 x 100 m^2), infrastructure requirements, as well as land use, natural environment and archaeological considerations.

From the fourteen sites, a total of three were short-listed to be further investigated through this current Municipal Class Environmental Assessment planning process.

The short list of three sites (**Figure ES-1**) determined through this study's evaluation process are as follows:

- Site 1: North side of Powerline Road
- Site 2: West side of King George Road
- Site 3: East side of King George Road

Figure ES-1: Siting Options for a new Water Storage Tank



Phase 1: Problem or Opportunity Statement

Phase 1 of the Municipal Class Environmental Assessment planning process requires the City to first document factors leading to the conclusion that the improvement is needed, and to develop a clear statement of the identified problems and opportunities to be investigated. The Problem and/or Opportunity for this study is presented below.

Problem

- Significant growth is expected in the City of Brantford (the City) which includes the recent northerly urban expansion area, as well as lands within the current City's northern urban boundary
- The City's recent Water, Wastewater and Stormwater Master Servicing Plan 2051 Amendment provides strategic direction for the City's future water distribution system including maintaining or modifying current pressure district boundaries and providing required storage in each pressure district for projected growth to 2051
- In order to service existing and future residents in the City's Pressure District 2/3, the Master Servicing Plan identifies the need for additional storage, which requires siting a new water storage tank along with associated watermains and determining pump station upgrade requirements to facilitate the additional storage tank
- The King George Elevated Tank is reaching the end of its useful life and requires substantial capital investment to maintain its operation

Opportunity

- Complete the Schedule B Municipal Class Environmental Assessment planning process in consultation with key stakeholders, review agencies, and Indigenous Communities in order to provide a viable short and long term solution that can be logically phased to address the need for storage in the City's Pressure District 2/3, taking into account that the existing King George Elevated Tank is reaching the end of its useful life

Phase 2: Alternative Solutions

The siting of a Water Storage Tank involves a two-step evaluation process. The feasibility study was undertaken as the initial step of the evaluation process, to identify and screen a long list of potential sites for a Water Storage Tank based on a site selection planning exercise that details minimum requirements. Phase 2 of this Municipal Class Environmental Assessment study is the second step of the two-step

process and is focused on evaluating the three short listed siting options (i.e., Sites 1, 2 and 3) for a new water storage tank identified in **Figure ES-1** and selecting a preferred solution (i.e., water storage tank).

Criteria were developed to evaluate the three siting options based on the following factors: land use, technical environment, natural environment, socio-economic environment, climate change, cultural heritage environment and cost. Refer to **Section 6.3** for the detailed evaluation.

Site 3 (**Figure ES-2**) was identified as the preferred solution overall based on a combination of the following key factors:

- Elevation of the site (228 to 232 metres) is suitable for construction of an elevated tank
- Proximity to Pressure District 2/3 being serviced by the new water storage tank
- No extensive watermain infrastructure required. Site is near 400 millimetres diameter watermains, as well as future proposed watermains north of Powerline Road
- Property owner is a willing host for a new water storage tank based on preliminary discussions with the City
- Based on a desktop review, no aquatic species at risk records have been identified for this site
- The siting area largely avoids existing residential areas (no displacement to residential property on the existing site as the property has been sold) with minimal disruption to surrounding land uses (residential and businesses) anticipated during construction and operation
- No known direct or indirect impact to built heritage resources or cultural heritage landscapes
- The site has been cleared of archaeological concern
- Fastest in-service date anticipated compared to other siting options
- Has sufficient acreage required to achieve planning setbacks, stormwater, water quality requirements, and flexibility for additional storage, if needed

Site 3 will include a new elevated water storage tank with accommodation for future additional storage (in-ground or elevated, to be determined) pending growth. The exact location and details of the proposed elevated water storage tank will be determined through the conceptual design and operational strategy development phases of the Project.

Along with the new water storage tank, the King George Elevated tank will be decommissioned in the future for optimization of Pressure District 2/3 operations. Upgrades to Tollgate and Wayne Gretzky Pumping Stations will be confirmed through preliminary and detailed design.

Communications and Consultation Overview

Several steps have been undertaken to engage and inform property owners of the selected short listed sites, as well as government agencies, Indigenous communities, and the local community. The following summarizes the activities undertaken:

- Development of a contact list at the onset of the study that was regularly updated to notify key review agencies, stakeholders, Indigenous communities and interested members of the public
- Issuance of the following notifications: Notice of Commencement, Notice of Public Information Centre, and Notice of Completion
- Advertising of the above noted notifications in the Civic News, Two Row Times and Turtle Island newspapers
- Posting of key information to the City's website (**brantford.ca/WaterStorageTankEA**) and social media platforms
- Issuance of notifications to the local Indigenous communities and sharing of information, as requested. At the onset of the study, a letter requesting the level of interest in the Project was circulated
- Hosting an in-person Public Information Centre to provide stakeholders, key review agencies, the public and Indigenous communities an opportunity to learn about the project and provide feedback on the siting options
- Individual meetings were held with property owners of the potential sites for a new water storage tank, where possible.

Potential Impacts and Proposed Mitigation Measures

Impacts related to construction of the new water storage tank and associated infrastructure will be largely limited to the duration and location of construction.

Based on the preferred location (Site 3), construction is expected to have varied effects on the environment and community. Efforts to minimize impacts such as land use disturbances and noise and vibration will be made by implementing standard construction and best management practices.

As tree removals are anticipated, surveys targeting bat species at risk habitat and presence should be completed and include leaf-off cavity searches and acoustic monitoring. Natural Environment field investigations will be completed during their appropriate survey timing windows.

The City will communicate upcoming activities to adjacent property owners and the community, prior to construction. General project information and updates will be provided through the City's website.

Proposed mitigation measures will be further developed during the preliminary and detailed design phases by means of further studies and permit applications, where applicable.

Conclusions

This Project File covers the process required to ensure that the proposed site for a new Pressure District 2/3 water storage tank complies with the Environmental Assessment Act. The Municipal Class Environmental Assessment planning process has not identified any significant environmental concerns that cannot be addressed by incorporating best management practices and established mitigation measures during construction.

The proposed new elevated water storage described in **Section 7** involves a new elevated water storage tank with accommodation for future additional storage (in-ground or elevated, to be determined), pending growth. The King George Elevated tank will be decommissioned in the future for optimization of Pressure District 2/3 operations. Upgrades to Tollgate and Wayne Gretzky Pumping Stations will be confirmed through preliminary and detailed design.

The preferred solution (Site 3) resolves the problem or opportunity statement. A preliminary evaluation of potential effects indicates minor to moderate and predictable impacts that can be addressed by recommended mitigation measures as presented in **Section 8**.

Subject to receiving Municipal Class Environmental Assessment clearance and acquiring the subject Site 3 property, the City will complete the preliminary and detailed design, which includes permitting-approvals and proceed to construction. The elevated water storage tank is anticipated to be in-service after construction is complete between 2026 and 2028.

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1. Introduction

1.1 Background

The City of Brantford (City) has through its consultant AECOM Canada Ltd (AECOM), completed a Schedule B Municipal Class Environmental Assessment study for siting a new water storage tank to service existing and future residents in the City's Pressure District 2/3. The need for additional storage in Pressure District 2/3 was identified in the City's recent Water, Wastewater and Stormwater Master Servicing Plan 2051 Amendment.

The study has evaluated a short list of alternatives for siting a new water storage tank to address the need for additional storage within the distribution system, in addition to associated transmission watermains and modifications to existing pumping stations to meet service area demands.

The existing King George Elevated Tank is reaching the end of its useful life and requires substantial capital investment to maintain its operation beyond around 2029. The Master Servicing Plan recommended that the King George Elevated Tank be decommissioned after the new storage tank is operational.

1.2 Feasibility Study

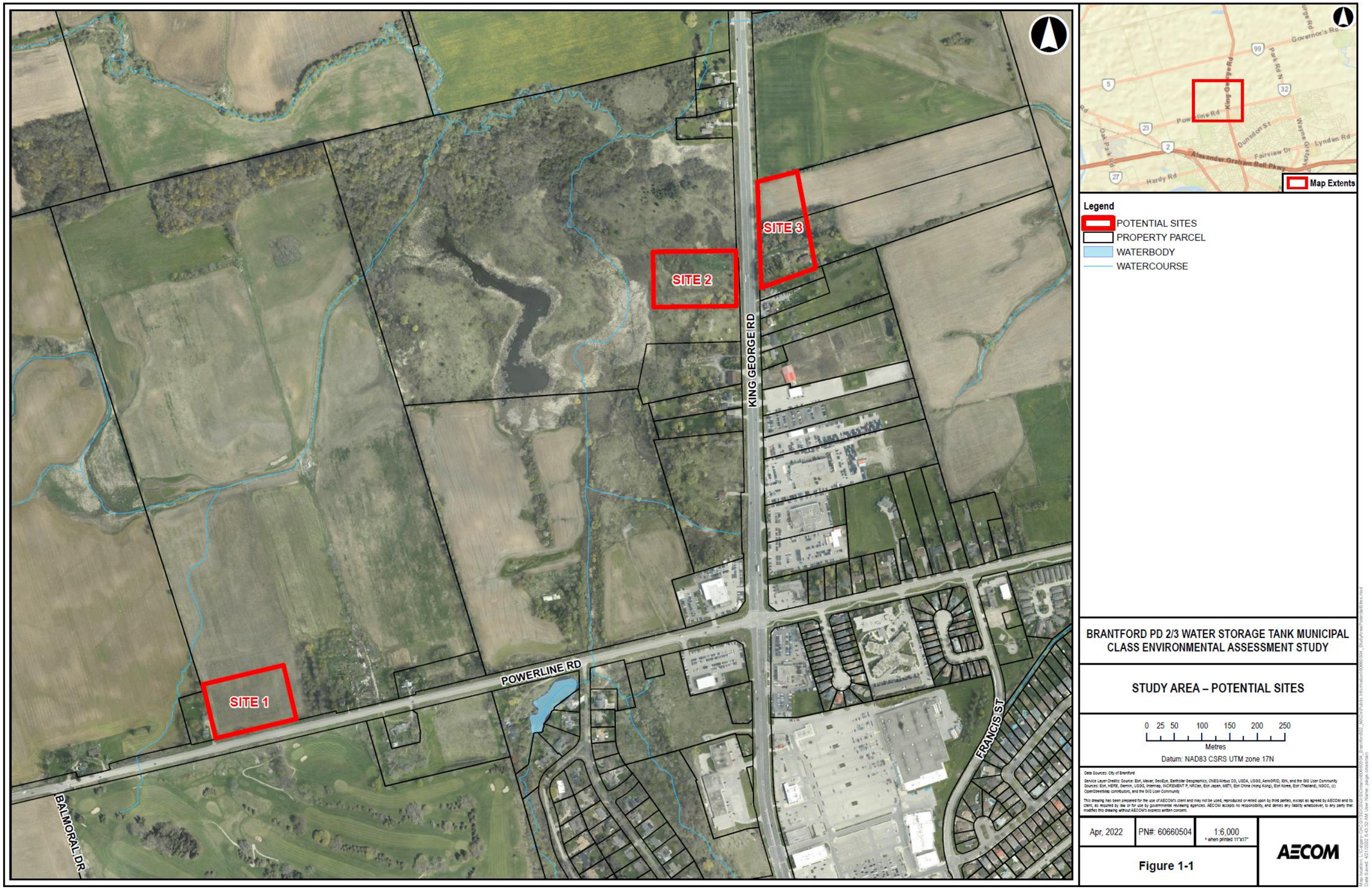
Prior to the commencement of this current Municipal Class Environmental Assessment, a feasibility study (**Appendix A**) was completed which identified and screened fourteen potential sites for a new water storage tank for Pressure District 2/3.

Key site identification criteria included location within Pressure District 2/3 or within a reasonable distance to existing or planned large diameter watermains, property ownership (preference for City owned, undeveloped lands and/or parks and open space), site attributes (e.g., preference for high elevation, minimum site size of 75 metres squared by 100 metres squared), infrastructure requirements, as well as land use, natural environment archaeological and built heritage resources and cultural landscape considerations.

From the fourteen sites, a total of three were short-listed to be further investigated through this current Municipal Class Environmental Assessment planning process. Refer to **Figure 1-1** for the location of the three potential sites, all approximately 1.6 hectares (4 acres) in size, that have evolved through this study's evaluation process:

- Site 1: North side of Powerline Road
- Site 2: West side of King George Road
- Site 3: East side of King George Road

Figure 1-1: Short List of Siting Options



2. Municipal Class Environmental Assessment Planning Process

2.1 Overview

All municipalities in Ontario are subject to the provisions of the Ontario *Environmental Assessment Act* and its requirements to prepare an Environmental Assessment for applicable public works projects. The Ontario Municipal Engineers Association "Municipal Class Environmental Assessment" manual (October 2000, as amended in 2007, 2011 and 2015) provides municipalities with a phased planning procedure, to plan and undertake all municipal sewage, water, stormwater management and transportation projects that occur frequently, are usually limited in scale and have a predictable range of environmental impacts and applicable mitigation measures.

In Ontario, infrastructure projects are subject to the Municipal Class Environmental Assessment process and must follow a series of mandatory steps as outlined in the Municipal Class Environmental Assessment manual. The Municipal Class Environmental Assessment manual consists of five phases and the application of the phases depends on the Municipal Class Environmental Assessment Schedule that applies to a project. The phases are summarized below:

- **Phase 1 – Problem or Opportunity:** Identify the problems or opportunities to be addressed and the needs and justification.
- **Phase 2 – Alternative Solutions:** Identify alternative solutions to the problems or opportunities by taking into consideration the existing environment, and establish the preferred solution considering public and agency review and input.
- **Phase 3 – Alternative Design Concepts for the Preferred Solution:** Examine alternative methods of implementing the preferred solution based upon the existing environment, public and agency input, anticipated environmental effects and methods of minimizing negative effects and maximizing positive effects.
- **Phase 4 – Environmental Study Report:** Document in an Environmental Study Report, a summary of the rationale, planning, design and consultation process for the project as established through Phases 1 to 3 above and make such documentation available for scrutiny by review agencies and the public.
- **Phase 5 – Implementation:** Complete contract drawings and documents, proceed to construction and operation, and monitor construction for adherence to environmental provisions and commitments. Also, where special conditions dictate, monitor the operation of the completed facilities.

Phases 1, 2 and 5 of the Municipal Class Environmental Assessment process apply to this project as it falls under the Schedule B project category. The Municipal Class Environmental Assessment process ensures that all projects are carried out with effectiveness, efficiency and fairness. The process serves as a mechanism for understanding economic, social and environmental concerns while implementing improvements to municipal infrastructure.

2.2 Project Planning Schedules

The Municipal Class Environmental Assessment defines four types of projects and the processes required for each (referred to as Schedule A, A+, B, or C). The selection of the appropriate schedule is dependent on the anticipated level of environmental impact, and for some projects, the anticipated construction costs. Projects are categorized according to their environmental significance and their effects on the surrounding environment. This study is categorized as a schedule B planning activity. The following describes the Municipal Class Environmental Assessment planning schedules:

- **Schedule A:** Projects are limited in scale, have minimal adverse environmental effects and include a number of municipal maintenance and operational activities. These projects are pre-approved and may proceed to implementation without following the full Municipal Class Environmental Assessment planning process.
- **Schedule A+:** The purpose of Schedule A+ is to ensure appropriate public notification for certain projects that are pre-approved under the Municipal Class Environmental Assessment. It is appropriate to inform the public of municipal infrastructure project(s) being constructed or implemented in their area.
- **Schedule B:** Projects have the potential for some adverse environmental effects. The proponent is required to undertake a screening process (Phases 1 and 2), involving mandatory contact with directly affected public and with relevant review agencies to ensure that they are aware of the project and that their concerns are addressed. If there are no outstanding concerns, then the proponent may proceed to implementation. At the end of Phase 2, a Project File documenting the planning process followed through Phases 1 and 2 shall be finalized and made available for public and agency review. However, if a concern is raised related to aboriginal and treaty rights which cannot be resolved, a Section 16 Order (previously referred to as a Part II Order) may be requested and considered by the Minister of the Environment, Conservation and Parks. Alternatively, the proponent may elect voluntarily to plan the project as a Schedule C undertaking.

- **Schedule C:** Projects have the potential for significant adverse environmental effects and must proceed under the full planning and documentation (Phases 1 to 4) procedures specified in the Municipal Class Environmental Assessment manual. Schedule C projects require that an Environmental Study Report be prepared and filed for review by the public and review agencies. If concerns related to aboriginal and treaty rights are raised that cannot be resolved then a Section 16 Order may be requested.

2.2.1 New Water Storage Tank Planning Schedule

As per the Ontario Municipal Engineers Association Municipal Class Environmental Assessment manual (October 2000, as amended in 2007, 2011 and 2015), establishing new or expanding/replacing existing water storage facilities is a Schedule B activity. As this study is proposing to build a new water storage tank, Phase 1 and Phase 2 of the Municipal Class Environmental Assessment planning process as described above (**Section 2.1**) apply to this study.

2.3 Communications and Consultation Overview

A key priority of community engagement has been to encourage the participation of stakeholders, key review agencies, the public and Indigenous communities. Several steps have been undertaken to help ensure that information is shared and concerns are captured and addressed in an inclusive and transparent manner throughout the Municipal Class Environmental Assessment process to build confidence and trust in the decision-making process and meet the requirements of the Municipal Class Environmental Assessment process. The following summarizes the key activities undertaken:

- Development of a contact list at the onset of the study that was regularly updated to notify key review agencies, stakeholders, Indigenous communities and interested members of the public
- Issuance of the following notifications: Notice of Commencement, Notice of Public Information Centre, and Notice of Completion
- Advertising of the above noted notifications in the Civic News, Two Row Times and Turtle Island newspapers
- Posting of key information to the City's website (**brantford.ca/WaterStorageTankEA**) and social media platforms
- Issuance of notifications to the local Indigenous communities and sharing of information, as requested. At the onset of the study, a letter requesting the level of interest in the Project was circulated to determine the level of interest in the Project.

- Hosting an in-person Public Information Centre to provide stakeholders, key review agencies, the public and Indigenous communities an opportunity to learn about the project and provide feedback on the siting options.
- Individual meetings were held with property owners of the potential sites for a new water storage tank, where possible.

All comments received were considered and addressed to the extent possible by the Study Team. Refer to **Section 10** for the overview of consultation completed for Phases 1 and 2 of this Municipal Class Environmental Assessment study.

2.4 Public Review of Project File and Next Steps

This Project File comprises the documentation for Schedule B requirements. Placement of the Project File report for public review on the City's website (**brantford.ca/WaterStorageTankEA**) completes Phase 2 of this Municipal Class Environmental Assessment study. The 30 day comment period commences on **March 8, 2023** and ends on **April 7, 2023** Interested persons may provide written comments to our study team by **April 7, 2023.** All comments and concerns should be sent directly to the Project Managers listed below.

- **Shahab Shafai**
  City Project Manager
  City of Brantford
  Telephone: (519) 759-4150 extension 5745
  Email address: sshafai@brantford.ca

- **Semyon Chaymann**
  Consultant Project Manager
  AECOM Canada Ltd.
  Telephone: (647) 524-9314
  Email address: semyon.chaymann@aecom.com

In addition, a Section 16 Order request may be made to the Ministry of the Environment, Conservation and Parks (MECP or Ministry) for an order requiring a higher level of study (i.e., requiring an individual/comprehensive Environmental Assessment approval before being able to proceed), or that conditions be imposed (e.g., require further studies), only on the grounds that the requested order may prevent, mitigate or remedy adverse impacts on constitutionally protected Aboriginal and treaty rights. Requests on other grounds will not be considered. Requests should include the requester contact information and full name.

Requests should specify what kind of order is being requested (request for conditions or a request for an individual/comprehensive environmental assessment), how an order

may prevent, mitigate or remedy potential adverse impacts on Aboriginal and treaty rights, and any information in support of the statements in the request. This will ensure that the Ministry is able to efficiently begin reviewing the request.

The request should be sent in writing or by email by **April 7, 2023** to both contacts below:

- Minister of the Environment, Conservation and Parks
  Ministry of Environment, Conservation and Parks
  777 Bay Street, 5th Floor
  Toronto, Ontario M7A 2J3
  minister.mecp@ontario.ca
- Director, Environmental Assessment Branch
  Ministry of Environment, Conservation and Parks
  135 St. Clair Avenue West, 1st Floor
  Toronto, Ontario M4V 1P5
  EABDirector@ontario.ca

Requests should also be copied to Mr. Shafai at the City by mail or by e-mail. Please visit the Ministry's website for more information on requests for orders under section 16 of the *Environmental Assessment Act* at: ontario.ca/page/class-environmental-assessments-section-16-order

All personal information included in your request – such as name, address, telephone number and property location – is collected, under the authority of section 30 of the Environmental Assessment Act and is collected and maintained for the purpose of creating a record that is available to the general public. As this information is collected for the purpose of a public record, the protection of personal information provided in the Freedom of Information and Protection of Privacy Act does not apply (s.37). Personal information you submit will become part of a public record that is available to the general public unless you request that your personal information remain confidential.

3. Existing Conditions

3.1 Technical Environment

The City of Brantford's water system is divided into three pressure district zones: Zone 1, Zone 2/3 and Zone 4 as shown in **Figure 3-1**.

Water is pumped to Pressure District 2/3 from the Holmedale Water Treatment Plant by way of the following pumping stations and storage facilities:

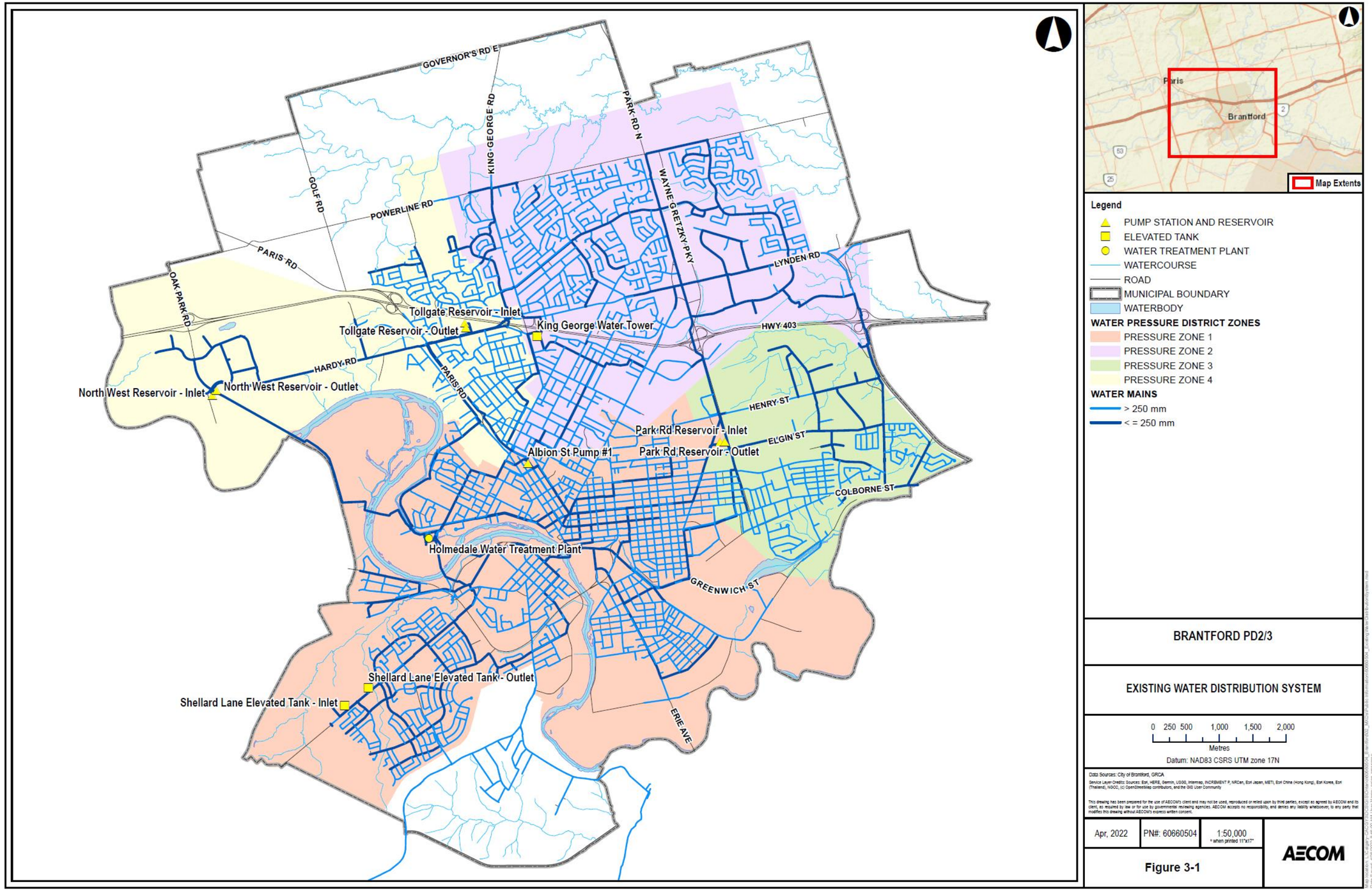
- Tollgate Road Reservoir and Pumping Station
- Wayne Gretzky Parkway Reservoir and Pumping Station
- Albion Street Pumping Station
- King George Road Elevated Tank

The Water, Wastewater and Stormwater Master Servicing Plan Update to 2051 followed the Municipal Class Environmental Assessment master plan process (Master Plan Approach # 1) and provides the City with clear strategic direction for the future water distribution system including maintaining current pressure district boundaries and providing required storage in each pressure district for projected growth to 2051. Through this Class Environmental Assessment, additional opportunities within this recommended solution were explored to ensure that the City maintains an energy efficient distribution system that provides optimal water quality and minimizes operational requirements.

The Master Servicing Plan reviewed possible modifications to existing pressure district boundaries and the preferred strategy was to maintain the current servicing strategy including current boundaries. Water will be supplied to the north development lands in Pressure District 2/3 through a primary trunk connection at King George Road with additional watermain connections to the existing system in Pressure District 2/3. The north employment lands will be serviced by Pressure District 4. The east residential lands north of Lynden Road will be serviced via a direct connection to the existing Pressure District 2/3 system on Lynden Road. In addition, a new sub-pressure district will be developed with a connection to Pressure District 2/3 to service employment lands east of Garden Avenue.

As a result of the proposed new growth, additional storage will be required in Pressure District 2/3. Also, pumping upgrades at both Wayne Gretzky and Tollgate Pumping Stations will be needed. Alternatives considered in the Master Servicing Plan for required storage in Pressure District 2/3 include a new elevated storage tank or decommissioning the Albion Booster Pump Station with pumped storage. The preferred solution identified in the Master Servicing Plan was a new elevated tank in the new Pressure District 2/3 development lands.

Figure 3-1: Existing Water Distribution System



In addition to storage required in Pressure District 2/3 in 2051, there is a shortfall in future storage requirements in Pressure District 1 due to additional growth in the south. Alternatives considered for servicing Pressure District 1 included providing pumps at the Holmedale Water Treatment Plant and adding to storage at Pressure District 2/3 with a flow-through valve into Pressure District 1. The Master Servicing Plan noted an advantage to oversizing the Pressure District 2/3 Elevated Tank to accommodate Pressure District 1 was that it provides greater hydraulic benefit, noting that the dependence on pumps at the Holmedale Water Treatment Plant would have higher energy usage and reduced system resiliency. However, pumping water from the Water Treatment Plant to storage in Pressure District 2/3 and then backfeeding to Pressure District 1 at a lower hydraulic grade line results in energy inefficiency compared to pumping as needed to Pressure District 1 from in-ground storage.

The preferred Master Servicing Plan solution for Pressure District 2/3 consisted of the following:

- New 11.8 ML elevated storage tank in Pressure District 2/3, requiring land acquisition
  - Service both Pressure District 2/3 and Pressure District 1 storage deficiency including North Expansion Lands to 2051
  - Post 2051 to service Pressure District 2/3 and Trigger Lands (at which time Pressure District 1 will require additional storage)
- Decommissioning of King George Elevated Tank
- Pump upgrades at existing facilities pump stations:
  - Wayne Gretzky Pump Upgrades – replace existing pumps with 3 new pumps to improve operational capacity and support new pressure district HGL. Install new pressure reducing valve or pressure sustaining valve to allow Pressure District 2/3 to backfeed to Pressure District 1
  - Tollgate Pump Upgrades – replace existing pumps with 3 new pumps to improve operational capacity and support new pressure district hydraulic grade line. Install new PRFV to allow Pressure District 2/3 to backfeed to Pressure District 1
- Decommissioning of Albion Booster Pumping Station
- New watermain infrastructure as required

The clear solution for Pressure District 2/3 is elevated storage to replace the King George Tank and to continue to provide an open zone. An open zone is a pressure district or zone that has an elevated water storage facility (sometimes referred to as “floating” storage) that can determine pump operation and pressures. Alternatively, a closed zone would create changes in pump operation and typical pressures in Pressure

District 2/3. There is a tendency in master planning to plan for the end point; that is to determine what is needed for ultimate buildout, or to a certain year (e.g., the Master Servicing Plan included future scenarios for 2041 and 2051). Unfortunately providing storage to meet future requirements can result in operational challenges in the interim. For example, excessive storage can lead to poor water quality from stagnation, and the need for mixing and possibly flushing (to maintain water quality). Also, provision of this additional storage at a higher hydraulic grade line will result in a high capital cost for infrastructure not needed in the short term. The City is in the challenging position of planning infrastructure for proposed growth without a defined schedule for its implementation. Similar to that experienced at the Northwest Reservoir and booster pumping station, the end result is the need to manage and operate infrastructure that is in place long before it is actually needed. Detailed discussion on review of the concept proposed by the Master Servicing Plan is presented in **Appendix B**.

Therefore, the proposed solution is that the City construct a smaller elevated tank than what was suggested in the Master Plan (e.g., 8 ML vs 12 ML) in the interim with enough land around the proposed elevated tank site to construct a second elevated tank or an inground reservoir when water demands warrant the additional expansion. Given this opportunity, the proposed site size was selected to be approximately 1.6 hectares (4 acres). The size of the site is based on doubling the typical elevated tank site.

The hydraulic grade line of Pressure District 2/3 is dictated by the top water level at King George Elevated Tank. The Master Servicing Plan proposed expanding the hydraulic grade line to 283 metres in Pressure District 2/3 to accommodate future growth areas and ensure adequate (above 275 kPa) pressure to customers in that zone. Therefore, the top water level at the proposed Pressure District 2/3 Elevated Tank should be 283 metres. As part of the site selection criteria, sites with higher elevations should have greater preference. City's InfoWater hydraulic model was used to compare hydraulic analysis for proposed Pressure District 2/3 Elevated Tank at either of the three shortlisted sites. No difference was noted in the results, indicating that all three potential sites could support a new waster storage tank from the hydraulics perspective. Detailed results and discussion are presented in **Appendix C**.

The following summarizes the existing conditions for the three shortlisted sites:

- **Site 1:** The existing site ground elevation (228 metres to 230 metres) is suitable for a water storage tank with an estimated height of 53 metres. Site 1 requires an additional watermain to be constructed along Powerline Road to connect to the site.
- **Site 2 and Site 3:** The existing site ground elevation (228 metres to 232 metres) is suitable for a water storage tank with an estimated height of 53 metres. Both sites can connect to the existing watermain on King George Road.

3.2 Natural Environment

3.2.1 Background Information Review

3.2.1.1 Designated Natural Areas

Natural features and areas identified for protection in the Provincial Policy Statement and other legislation are collectively referred to as “Designated Natural Areas”. These include but are not limited to Significant Wetlands, Significant Wildlife Habitat, etc. and may be identified by the applicable planning authorities (e.g., province, municipality, conservation authority).

None of the three siting options contain any designated natural areas within their conceptual boundaries; however, the Cold Spring Creek Provincially Significant Wetland complex is located within 50 metres of Site 2. A mixed wader nesting colony concentration area was also identified through the background review and while the exact location was not known it was assumed that it is associated with the Provincially Significant Wetland. Designated natural areas in the vicinity of each of the siting options are illustrated on **Figure 3-2**.

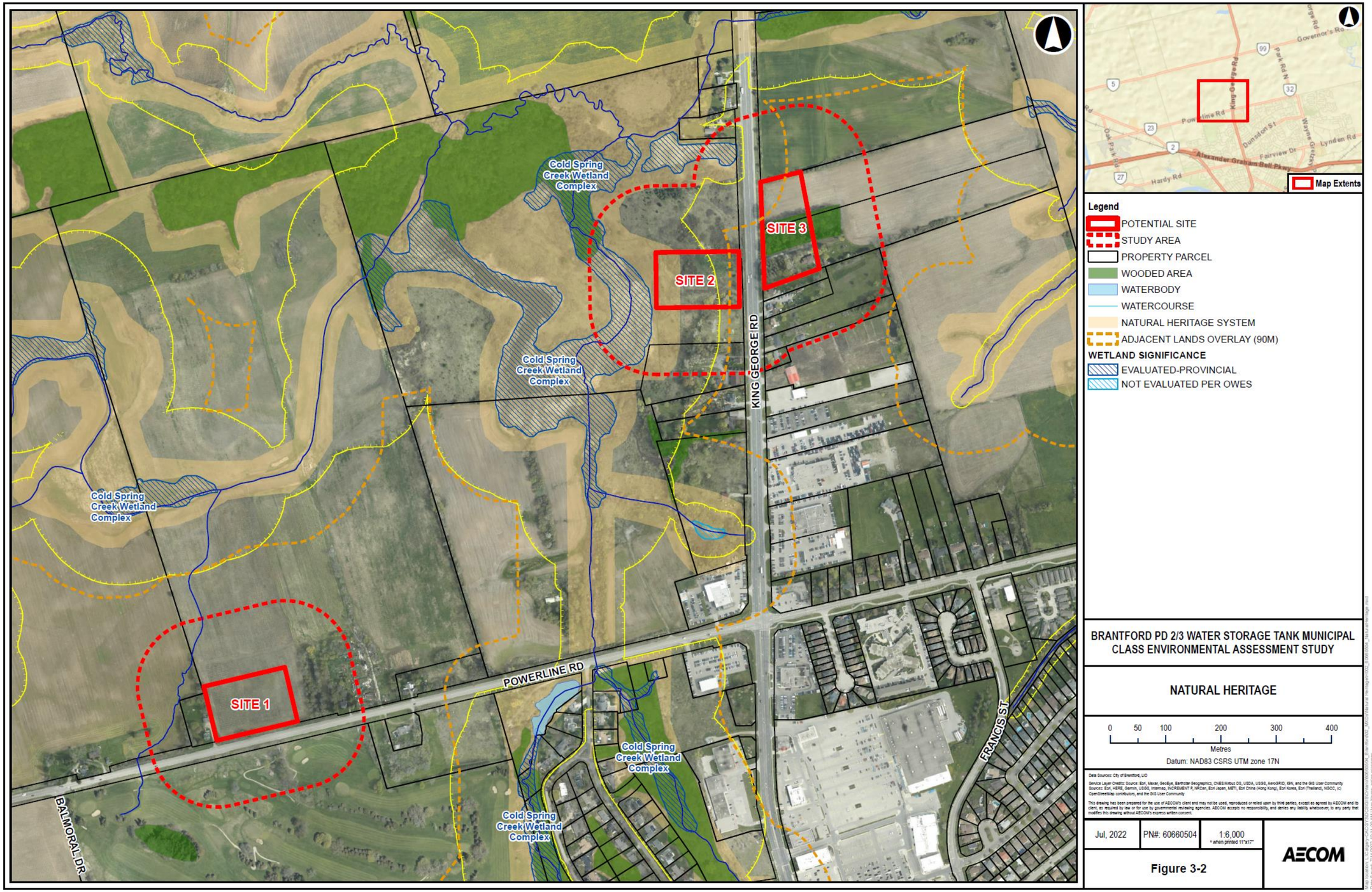
3.2.1.2 Policy Areas

Site 2 is located within the Grand River Conservation Authority regulation limits associated with the unnamed tributary of Fairchild Creek that is located outside of the Site boundary. In addition, the western portion of Site 2 is located within a Core Natural Area that is part of the City of Brantford’s Natural Heritage System with the remaining area of Site 2 located in the adjacent lands overlay (defined as 90 metres as per the Official Plan) to the Core Natural Area. Sites 1 and 3 are located outside of any applicable policy areas with the exception of Site 3, which partially falls within adjacent lands of the Natural Core Area located on the west side of King George Road.

3.2.1.3 Vegetation

The three sites are all located within Ecoregion 7E (Lake Erie-Lake Ontario). Ecoregion 7E, which is part of the Mixed wood Plains Ecozone, extends from Windsor to Toronto and includes the Niagara Region. The Lake Erie Lowland Ecoregion is underlain by carbonate-rich, Paleozoic bedrock, and is dominated by a variety of deep glacial deposits (Ecological Stratification Working Group, 1995). Forests in this Ecoregion, which are sparse due to urban development and agriculture, are characterized by sugar maple (*Acer saccharum*), American beech (*Fagus grandifolia*), oaks (*Quercus* spp.), ash (*Fraxinus* spp.), American elm (*Ulmus americana*), eastern cottonwood (*Populus deltoids*), balsam poplar (*Populus balsamifera*) and silver maple (*Acer saccharinum*) (Ecological Stratification Working Group, 1995).

Figure 3-2: Existing Conditions – Natural Heritage



3.2.1.4 Terrestrial Species at Risk and Species of Conservation Concern

Based on the background review, there are recent records (i.e., within 20 years) of six (6) Species of Conservation Concern and twenty (20) Species at Risk identified within or in the vicinity of each site; these species records are summarized in **Table 3-1** and were used as part of the Species of Conservation Concern/Species at Risk habitat screening.

3.2.1.5 Fish and Fish Habitat

There were no watercourses or water features identified within any of the limits of the conceptual siting options for a new water storage tank; however, watercourses were identified within 120 metres of Sites 1 and 2 through the background review. Using aerial imagery and GIS mapping, a possible water feature was identified approximately 30 metres northwest of Site 1 and an unnamed tributary of Fairchild Creek approximately 50 metres west of Site 2 which is associated with the Cold Spring Provincially Significant Wetland complex that drains into the Grand River. According to the DFO's aquatic Species at Risk map online, there are no aquatic Species at Risk identified within these watercourses. There were no watercourses identified in or within 120 metres of Site 3. The Ministry of the Environment Conservation and Parks indicated that there are records of Silver Shiner (*Notropis photogenis)* and Black Redhorse (*Moxostoma duquesnei)* in the vicinity of the Study Areas on January 13, 2023 (refer to **Appendix D**). These species are known to occur in the Grand River to which Fairchild Creek flows into, but there are no records of these species within Fairchild Creek or its tributaries nor is the habitat suitable for these fish Species at Risk within 120 m of Site 1 and 2.

3.2.2 Field Investigations Results

Field investigations were conducted on June 23, 2022 by AECOM ecologists where Permission to Enter was granted. Findings from field investigations were used to supplement the available background information. Field investigations included the following, which are described further below:

- Vegetation community classification and mapping
- List of wildlife species observed, and evidence of wildlife habitat on man-made structures, including direct observation and incidental evidence
- Assessment of habitat potential based on wildlife observations and site conditions
- Location of any Species at Risk, Species of Conservation Concern or their habitats

Table 3-1: Species at Risk and Species of Conservation Concern records Within Vicinity of the Sites

Taxon	Common Name	Scientific Name	S-Rank[1]	ESA Status[2]	COSEWIC Status[3]	Source[4]	Latest Year[3]
Amphibians	Western Chorus Frog - Great Lakes - St. Lawrence - Canadian Shield population	*Pseudacris maculata pop. 1*	S4	NAR	THR	ORAA	2013
Amphibians	Jefferson Salamander	*Ambystoma jeffersonianum*	S2	END	END	MECP	N/A
Birds	Acadian Flycatcher	*Empidonax virescens*	S1B	END	END	MECP	N/A
Birds	Bank Swallow	*Riparia*	S4B	THR	THR	eBird	2018
Birds	Barn Swallow	*Hirundo rustica*	S5B	THR	THR	OBBA	2016
Birds	Bobolink	*Dolichonyx oryzivorus*	S4B	THR	THR	eBird, OBBA	2018
Birds	Chimney Swift	*Chaetura pelagica*	S4B,S4N	THR	THR	OBBA	2001-2005
Birds	Eastern Meadowlark	*Sturnella magna*	S4B	THR	THR	OBBA, NHIC	2001-2005
Birds	Eastern Wood-Pewee	*Contopus virens*	S4B	SC	SC	OBBA	2001-2005
Birds	Grasshopper Sparrow	*Ammodramus savannarum*	S4B	SC	SC	OBBA	2001-2005
Birds	Red-headed Woodpecker	*Melanerpes erythrocephalus*	S3	SC	THR	MECP	N/A
Fish	Black Redhorse	*Moxostoma duquesnei*	S2	THR	THR	MECP	N/A
Fish	Silver Shiner	*Notropis photogenis*	S2S3	THR	THR	MECP	N/A
Insects	Monarch	*Danaus plexippus*	S2N,S4B	SC	END	OBA	2019
Mammals	Eastern small-footed myotis	*Myotis leibii*	S2S3	END	N/A	BCI	N/A
Mammals	Little Brown Myotis	*Myotis lucifugus*	S3	END	END	BCI	N/A
Mammals	Northern Myotis	*Myotis septentrionalis*	S3	END	END	BCI	N/A
Mammals	Tricolored bat	*Perimyotis subflavus*	S3?	END	END	BCI	N/A
Plants	Bird's-foot Violet	*Viola pedata*	S1	END	END	MECP	N/A
Plants	Black Ash	*Fraxinus nigra*	S3	END	THR	MECP	N/A
Plants	Butternut	*Juglans cinerea*	S2?	END	END	iNat	2020
Plants	Dwarf Chinquapin Oak	*Quercus prinoides*	S2	No Status	No Status	iNat	2020
Plants	Kentucky Coffee-tree	*Gymnocladus dioicus*	S2	THR	THR	MECP	N/A
Reptiles	Blanding's Turtle	*Emydoidea blandingii*	S3	THR	END	ORAA	2019
Reptiles	Northern Map Turtle	*Graptemys geographica*	S3	SC	SC	ORAA	2013
Reptiles	Queensnake	*Regina septemvittata*	S2	END	END	ORAA	2018
Reptiles	Snapping Turtle	*Chelydra serpentina*	S4	SC	SC	ORAA, NHIC	2019
Reptiles	Eastern Hog-nosed Snake	*Heterodon platirhinos*	S3	THR	THR	MECP	N/A

Note: 1. S rank: The natural heritage provincial ranking system (provincial S-rank) is used by the Ministry of Natural Resources and Forestry NHIC to set protection priorities for rare species and natural communities. The following status definitions were taken from NatureServe Explorer's (2015) National and Subnational Conservation Status Definitions available at http://explorer.natureserve.org/nsranks.htm:
S3 – Vulnerable—Vulnerable in the province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
S4 – Apparently Secure—Uncommon but not rare; some cause for long-term concern due to declines or other factors.
S5 – Secure—Common, widespread, and abundant in the nation or state/province.
SNR – Unranked—Province conservation status not yet assessed.
SU – Unrankable—Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
SNA – Not Applicable —A conservation status rank is not applicable because the species is not a suitable target for conservation activities.
S#S# - Range Rank —A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).
Breeding Status Qualifiers
B – Breeding—Conservation status refers to the breeding population of the species in the province.
N – Nonbreeding—Conservation status refers to the non-breeding population of the species in the province.

Note: 2. ESA Status: The Endangered Species Act 2007 (ESA) protects species listed as Threatened and Endangered on the Species at Risk in Ontario (SARO) List on provincial and private land. The Minister lists species on the SARO list based on recommendations from the Committee on the Status of Species at Risk in Ontario (COSSARO), which evaluates the conservation status of species occurring in Ontario. The following are the categories of at risk:
END (Endangered) – A species facing imminent extinction or extirpation in Ontario.
THR (Threatened) – Any native species that, on the basis of the best available scientific evidence, is at risk of becoming Endangered throughout all or a large portion of its Ontario range if the limiting factors are not reversed.
SC (Special Concern) – A species that may become Threatened or Endangered due to a combination of biological characteristics and identified threats.

Note: 3. COSEWIC: COSEWIC assess and designates recommended protection statuses under SARA as follows:
Extirpated (EXP) – a wildlife species that no longer exists in the wild in Canada, but exists elsewhere in the wild (SARA Registry, 2012).
Endangered (END) – a wildlife species that is facing imminent extirpation or extinction (SARA Registry, 2012).
Threatened (THR) – a wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction (SARA Registry, 2012).
Special Concern (SC) – a wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats (SARA Registry, 2012).

Note: 4. Sources: ORAA – (ORAA, 2019); eBird – (eBird, 2022); OBBA – (BSC et al. 2006); NHIC – (Ministry of Natural Resources and Forestry, 2015); BCI – (BCI, 2022); iNat – (iNaturalist, 2022)

3.2.2.1 Vegetation Communities

A total of six Ecological Land Classification communities were identified across all three Sites. **Table 3-2** provides a summary of the Ecological Land Classification community descriptions as well as their community sensitivities. Generally, it was found that all sites were disturbed by anthropogenic activities as evidenced by presence of numerous non-native and invasive plant species; however, generally the vegetation communities identified within Site 2 were of higher quality than compared to those identified in Sites 1 or 3. More detailed descriptions for each site are provided below. None of the vegetation communities were identified as provincially significant.

Site 1

- Site 1 was assessed from the roadside and was a recently tilled agricultural field at the time of investigation (**Figure 3-3a**). No planted crop could be identified based on the roadside assessment. A hedgerow of various tree, shrub, and herbaceous plant species existed along the roadside within the 120 metres buffer of Site 1 as described in **Table 3-2**. A total of 21 plant species were identified in the hedgerow (CUH), of which 8 (38%) were native and 13 (62%) were non-native. No Species at Risk, provincially or locally rare plants were observed within this site.

Site 2

- Field investigations have identified Site 2 as a mosaic of multiple Ecological Land Classification communities (**Figure 3-3b**). It was dominated by Dry-Moist Old Field Meadow Type with Mineral Cultural Thicket complex followed by a Gray Dogwood Mineral Thicket Swamp as described in **Table 3-2**. A total of 88 plant species were identified, of which 47 (53%) were native and 41 (47%) were non-native. No Species at Risk or provincially rare plants were observed within this site. However, pointed broom sedge (*Carex scoparia*), a locally rare plant, was identified on site on the southeast margin of the MAM2 community. Common reed *(Phragmites australis)* dominated the entire Meadow Marsh (MAM2) community, though it was uncommon in the other vegetation communities within this site.

Site 3

- The northern half of Site 3 consisted entirely of a soybean agricultural field (**Figure 3-3c**). The southern half of Site 3 consisted of a conifer plantation dominated by mature Scots pine *(Pinus sylvestis)*. A total of 40 plant species were identified within the Cultural Coniferous Plantation (CUP3), of which 13 (32%) were native, and 27 (68%) were non-native. No Species at Risk, provincially or locally rare plants were observed within this site.

Table 3-2: Ecological Land Classification Communities within each Site

Location	Ecological Land Classification Code	Ecological Land Classification Name	ELC Description	Amount of Vegetation Community within Site	Floristic Analysis
Site 1	CUH	Hedgerow	■ The hedgerow row was located on the north side of Powerline Road bordering an agricultural field and included white cedar (*Thuja occidentalis*), black walnut (*Juglans nigra*), Manitoba maple *(Acer negundo)*, white pine (*Pinus strobus*), green ash (*Fraxinus pennsylvanica*), American elm, and white mulberry (*Morus alba*). Common shrub species observed included common buckthorn *(Rhamnus catharnica)*, and Tartarian honeysuckle *(Lonicera tatarica)*. Ground cover dominated by smooth brome *(Bromus inermis)*, Kentucky bluegrass (*Poa pratensis*), reed canary grass (*Phalaris arundinacea*) and riverbank grape (*Vitis riparian*).	<0.5 hectares	■ CC: 0.67 ■ CW: 1.76 ■ % Non-native: 62% ■ FQI: 1.89 ■ No Species at Risk, provincially or locally rare plants were observed.
Site 2	SWT2-9	Gray Dogwood Mineral Thicket Swamp Type	■ The swamp thicket was sporadically comprised of American elm, green ash, white ash (*Fraxinus americana*), Manitoba maple and fireberry hawthorn (*Crataegus chrysocarpa*). Shrub layer cover (>60%) consisted of gray dogwood (*Cornus racemosa*), sand bar willow *(Salix interior),* red-osier dogwood *(Cornus sericea)*, and Tartarian honeysuckle. The ground layer was vegetated with reed canary grass (*Phalaris arundinacea*), smooth brome, orchard grass (*Dactylis glomerata*), tall goldenrod (*Solidago altissima*), elecampane (*Inula helenium*), and hairy willowherb (*Epilobium hirsutum*).	0.48 hectares	■ CC: 1.03 ■ CW: 0.91 ■ % Non-native: 46% ■ FQI: 4.48 ■ No Species at Risk, provincially or locally rare plants were observed.
Site 2	MAM2	Mineral Meadow Marsh Ecosite	■ The meadow marsh vegetation community was recorded on east side of Site 2. Vegetation cover was dominated by common reed with reed canary grass field horsetail (*Equisetum arvense*), oval-leaved sedge (*Carex cephalophora*), fox sedge (*Carex vulpinoidea*), pointed broom sedge and giant goldenrod (*Solidago gigantea*).	0.15 hectares	■ CC: 1.25 ■ CW: 0.38 ■ % Non-native: 46% ■ FQI: 4.51 ■ Pointed Broom Sedge (*Carex scorparia*), a locally rare plant, was identified. No Species at Risk or provincially rare plants were observed.
Site 2	CUM1-1 with CUT1	Dry- Moist Old Field Meadow Type with Mineral Cultural Thicket Ecosite complex	■ This complex vegetation community is a mosaic of cultural meadow community where patches of meadow are interspersed between patches of thicket. Shrub layer cover (>45%) consisted of autumn olive *(Elaeagnus umbellata)*, common buckthorn, red-osier dogwood, gray dogwood, common privet (*Ligustrum vulgare*) and nannyberry (*Viburnum lentago*). Ground cover (>60%) dominated by poverty oatgrass (*Danthonia spicata*), orchard grass, smooth brome, meadow hawkweed (*Pilosella caespitosa*) with tall goldenrod, Canada goldenrod (*Solidago canadensis*), wild carrot (*Daucus carota*), Kentucky bluegrass, and black medick (*Medicago lupulina*).	0.51 hectares	■ CC: 1.11 ■ CW: 2.55 ■ % Non-native: 55% ■ FQI: 5.45 ■ No Species at Risk, provincially or locally rare plants were observed.
Site 2	CUW1	Mineral Cultural Woodland Ecosite	■ The open canopy of the cultural woodland community was dominated by crack willow (*Salix euxina*), black locust (*Robinia pseudoacacia*), black walnut, eastern cottonwood, green ash, Norway maple (*Acer platanoides*), Russian olive (*Elaeagnus angustifolia*), and Manitoba maple. The understory was dominated by red-osier dogwood, gray dogwood, autumn olive and common buckthorn. The ground layer was comprised of smooth brome, Kentucky bluegrass, reed canary grass, wild basil (*Clinopodium vulgare*), with spreading dogbane (*Apocynum androsaemifolium*), milkweed (*Asclepias syriaca*), wild carrot, and Canada goldenrod.	0.31 hectares	■ CC: 1.05 ■ CW: 1.81 ■ % Non-native: 46% ■ FQI: 4.71 ■ No Species at Risk, provincially or locally rare plants were observed.
Site 3	CUP3	Coniferous Plantation Ecosite	■ The canopy consisted of Scots pine, Norway spruce (*Picea abies*), Norway maple, green ash, freeman's maple (*Acer x freemanii*), black walnut and blue spruce (*Picea pungens*). Common shrub species observed included Tartarian honeysuckle, common buckthorn, red-osier dogwood, and multiflora rose (*Rosa multiflora*). Herbaceous species observed included Kentucky bluegrass, smooth brome, common bedstraw (*Galium aparine*), smooth bedstraw (*Galium molugo*), garlic mustard (*Alliaria petiolata*), meadow hawkweed, orange hawkweed (*Pilosella aurantiaca*), common self-heal (*Prunella vulgaris*), common dandelion (*Taraxacum officinale*), and Canada goldenrod.	0.81 hectares	■ CC: 0.80 ■ CW: 2.75 ■ % Non-native: 70% ■ FQI: 2.88 ■ No Species at Risk, provincially or locally rare plants were observed.

Figure 3-3a: Ecological Land Classifications for Sites 1-3

Figure 3-3b: Ecological Land Classifications for Sites 1-3

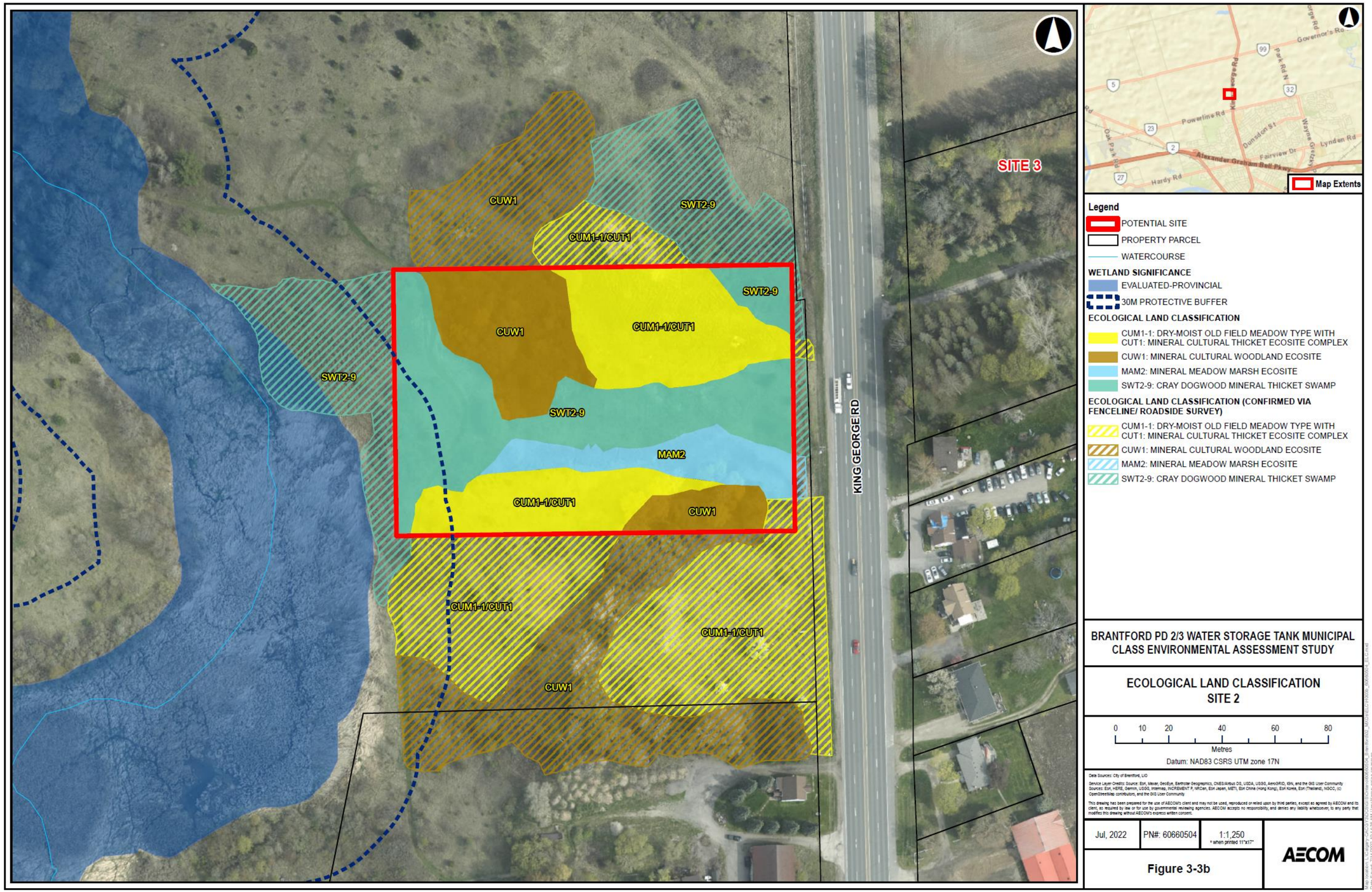
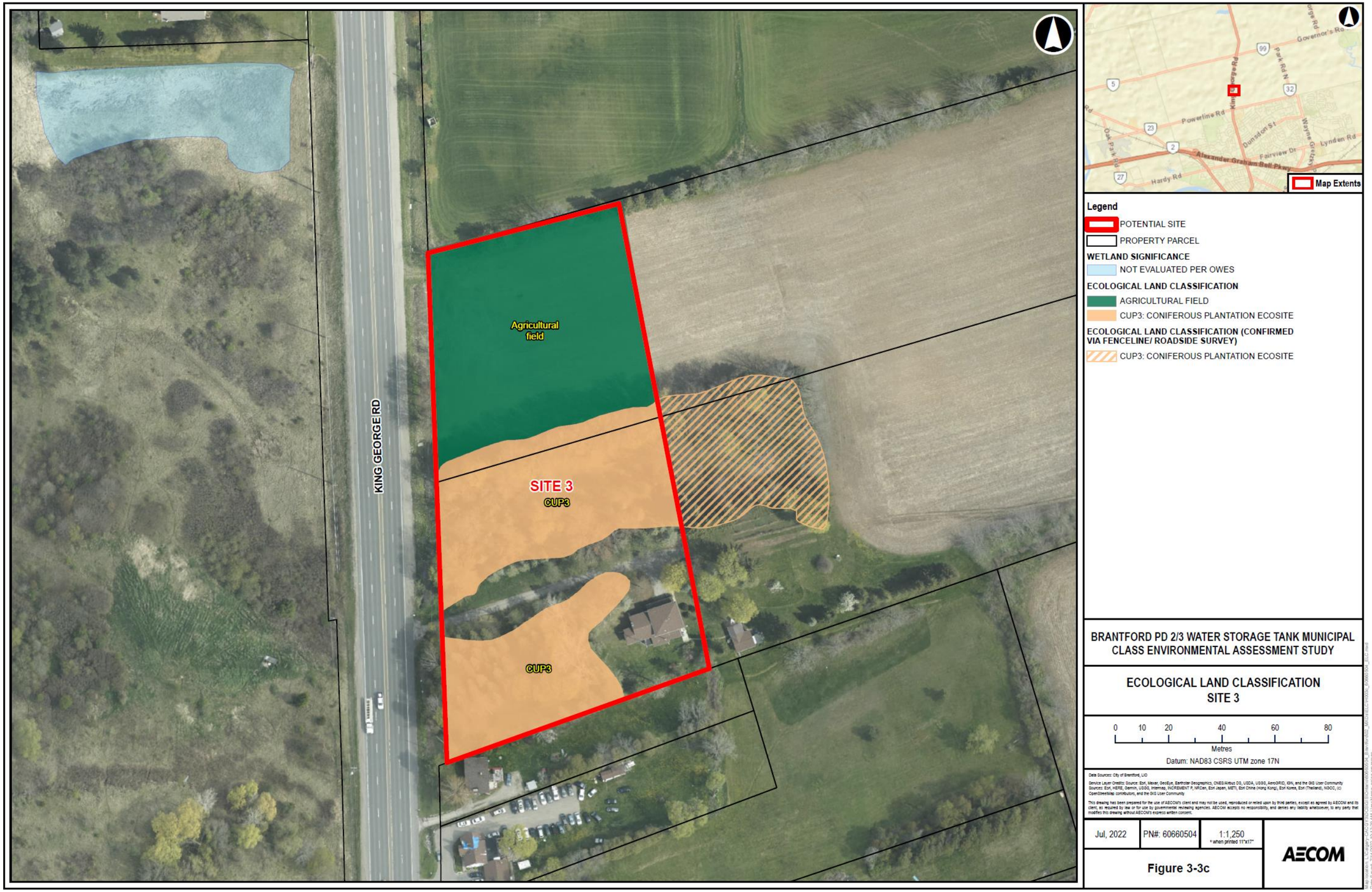


Figure 3-3c: Ecological Land Classifications for Sites 1-3



3.2.2.2 Fish and Fish Habitat

Watercourses identified through the background review near Sites 1 and 2 were inspected from the roadside or site boundary to confirm presence in the field. The watercourse located west of Site 1 was confirmed to be an ephemeral agricultural drain and entirely dry at the time of the investigation. Therefore, no aquatic habitat was found to be present within or surrounding Site 1.

The water feature located within 50 metres west of Site 2 drains north into an unnamed tributary of Fairchild creek before crossing King George Road 400 metres north of Site 2 through a concrete box culvert. An assessment of this water feature was not possible from the Site 2 boundary, although aerial imagery suggests this feature is ephemeral and unlikely to support fish habitat.

3.2.2.3 Incidental Wildlife

Incidental wildlife observations recorded during field investigations for the three potential water storage tank siting options are summarized in **Table 3-3**.

Table 3-3: Incidental Wildlife Observations

Site	Taxon	Common Name	Scientific Name	S-Rank[1]	ESA Status[2]	COSEWIC Status[3]	Notes
1	Insects	Grapevine Epimenis Moth	*Psychomorpha epimenis*	S4	No Status	No Status	-
1	Insects	Small Mulberry Borer	*Dorcaschema alternatum*	SH	No Status	No Status	Adult; observed on White Mulberry within hedgerow.
2	Birds	American Crow	*Corvus brachyrhynchos*	S5B	No Status	No Status	-
2	Birds	American Robin	*Turdus migratorius*	S5B	No Status	No Status	Observed nesting in CUM1-1/CUT1
2	Birds	Barn Swallow	*Hirundo rustica*	S5B	THR	THR	Flying overhead CUM1-1/CUT1; no suitable nesting habitat (i.e., barns) on or surrounding site.
2	Birds	Cedar Waxwing	*Bombycilla cedrorum*	S5B	No Status	No Status	-
2	Birds	Chipping Sparrow	*Bruant familiar*	S5B	No Status	No Status	-
2	Birds	Common Grackle	*Quiscalus quiscula*	S5B	No Status	No Status	-
2	Birds	Common Yellowthroat	*Geothlypis trichas*	S5B	No Status	No Status	-
2	Birds	Gray Catbird	*Dumetella carolinensis*	S4B	No Status	No Status	-
2	Birds	Mourning Dove	*Zenaida macroura*	S5	No Status	No Status	-
2	Birds	Northern Cardinal	*Cardinalis*	S5	No Status	No Status	-
2	Birds	Northern Flicker	*Colaptes auratus*	S4B	No Status	No Status	-
2	Birds	Orchard Oriole	*Icterus spurius*	S4B	No Status	No Status	-
2	Birds	Red-winged Blackbird	*Agelaius phoeniceus*	S4B	No Status	No Status	-
2	Birds	Song Sparrow	*Melospiza melodia*	S5B	No Status	No Status	-
2	Birds	Tree Swallow	*Tachycineta bicolor*	S4B	No Status	No Status	-
2	Birds	Warbling Vireo	*Vireo gilvus*	S5B	No Status	No Status	-
2	Birds	Yellow Warbler	*Setophaga petechia*	S5B	No Status	No Status	-
2	Insects	Cabbage White	*Pieris rapae*	SNA	No Status	No Status	-
2	Insects	Common Whitetail	*Plathemis lydia*	S5	No Status	No Status	-
2	Insects	Monarch	*Danaus plexippus*	S2N,S4B	SC	END	Larvae; observed feeding on Common Milkweed in CUM1-1/CUT1 at southeast of Site.

Site	Taxon	Common Name	Scientific Name	S-Rank[1]	ESA Status[2]	COSEWIC Status[3]	Notes
2	Insects	Red-spotted Purple	*Limenitis arthemis astyanax*	S5	No Status	No Status	-
2	Insects	Spotted Tussock Moth	*Psychomorpha epimenis*	S4	No Status	No Status	-
2	Insects	Viceroy	*Limenitis archippus*	S5	No Status	No Status	-
2	Insects	Virginia Ctenucha Moth	*Ctenucha virginica*	S5	No Status	No Status	-
2	Mammals	Coyote	*Canis latrans*	S5	No Status	No Status	-
2	Mammals	White-tailed Deer	*Odocoileus virginianus*	S5	No Status	No Status	-
3	Birds	American Robin	*Turdus migratorius*	S5B	No Status	No Status	-
3	Birds	Mourning Dove	*Zenaida macroura*	S5	No Status	No Status	-
3	Insects	Cabbage White	*Pieris rapae*	SNA	No Status	No Status	-
3	Mammals	Eastern Chipmunk	*Tamias striatus*	S5	No Status	No Status	-

Notes 1, 2 and 3 Refer to definitions under Table 3-1.

3.2.3 Significant Wildlife Habitat

Sites 1 and 3 were predominately agricultural fields and as such provided limited potential for Significant Wildlife Habitat. However, the Conifer Plantation in Site 3 included suitable snags which may provide Significant Wildlife Habitat as described in **Table 3-4**. In addition, an adult small mulberry borer (*Dorcaschema alternatum*), a longhorned beetle *(Anoplophora sp.)* currently assessed as "Possibly Extirpated" in Canada (NatureServe, 2022), was identified within Site 1 as described in **Table 3-4**; however, there have been other recent records of this species in the Greater Toronto Area (iNaturalist, 2022) and therefore it is unlikely that it is extirpated**.** Nevertheless, its status as Significant Wildlife Habitat qualifies the small mulberry borer as a Species of Conservation Concern.

In contrast, Site 2 consisted of a wider range of naturalized communities providing more opportunities to support a diverse range of wildlife and Significant Wildlife Habitat. A detailed screening of all Significant Wildlife Habitat is provided in the **Natural Environment Report (Appendix D).** All candidate and confirmed Significant Wildlife Habitat identified by field investigations for Sites 1 to 3 are described in **Table 3-4**.

Table 3-4: Candidate and Confirmed Significant Wildlife Habitat

Significant Wildlife Habitat	Site 1	Site 2	Site 3
Seasonal Concentration Areas of Animals	■ None identified.	■ A **Candidate** Raptor Wintering Area of sufficient size (>20 ha) and habitat (i.e., CUT, CUM, FOD) was identified within (CUM1-1/CUT) and surrounding the site boundary. ■ **Candidate** Bat Maternity Colonies were identified as a woodland community (CUW1) with candidate bat cavity trees were observed within the site boundary ■ **Candidate** Snake Hibernaculum was identified within the site boundary as evidenced by a building foundation with subterranean access.	■ **Candidate** The Cultural Coniferous Plantation (CUP3) may provide Bat Maternity Colonies as candidate bat cavity trees were observed present on-site in this community.
Specialized Habitats of Wildlife	■ None identified.	■ A **Candidate** Turtle Nesting Area was identified inside the site boundary within exposed mineral soil in the Mineral Cultural Meadow/Thicket community mosaic (CUM1-1/CUT); see Appendix B, Photo 5 of the **Natural Environment Report** (**Appendix D**). Although, there was no turtle overwintering habitat identified within the site, candidate turtle overwintering habitat is likely present within the Provincially Significant Wetland (adjacent to the site) and therefore, turtles may travel from the Provincially Significant Wetland to the Site to nest. A large open water pond of apparently suitable habitat occurs 200 metres from the site. ■ **Candidate** Amphibian Breeding Habitat (Wetlands) was supported by the marsh and swamp communities within (MAM2, SWDT2-9) and surrounding (MAS2-1) the site boundary.	■ None identified.
Habitats of Species of Conservation Concern	■ **Confirmed** Small Mulberry Borer Habitat was identified outside of the Site 1 boundaries but immediately adjacent within the hedgerow running parallel to Powerline Road. One adult was present on a white mulberry tree within the hedgerow.	■ **Confirmed** Monarch Breeding Habitat was identified within the site boundary as evidenced by presence of Common Milkweed and one feeding caterpillar on a common milkweed plant within the CUM1-1/CUT1 community. ■ **Candidate** Grasshopper Sparrow Habitat was supported by the Cultural Meadow with Cultural Thicket (CUM1-1/CUT) community within the site boundary. ■ **Candidate** Eastern Wood Pewee Habitat was supported by the Cultural Woodland (CUW1) community within the site boundary. ■ **Candidate** Western Chorus Frog - Great Lakes - St. Lawrence - Canadian Shield population Habitat was supported by the marsh and swamp and communities within (MAM2, SWDT2-9) and surrounding (MAS2-1) the site boundary. ■ **Candidate** Common Snapping Turtle Habitat likely supported by the Cattail Marsh (MAS2-1) community as part of the Provincially Significant Wetland within the 120 metres buffer to the site.	■ None identified.

3.2.4 Species at Risk

The Species at Risk Habitat Assessment and screening exercise for each site is appended to the **Natural Environment Report (Appendix D)**. Through findings from the background review as well as field investigations, many of the listed Species at Risk in **Table 3-1** were identified to have a low probability of occurrence within each site. The Ministry of the Environment, Conservation and Parks indicated on January 13, 2023, that all three Sites are located within the recommended habitat regulation of Eastern Hog-nosed Snake (*Heterodon platirhinos*), which consists of contiguous open habitat, wetlands, forests and forest edges within 5 km of a sighting (Kraus, T. 2011). Site 1 did not contain suitable habitat for any Species at Risk as the Site was situated entirely within an agricultural field with row crop. Potentially suitable habitat for Species at Risk was identified at Site 1, Site 2 and Site 3. **Table 3-5** below provides a summary of Species at Risk with medium or high probability of occurring within each site.

3.3 Geotechnical Characteristics

A geotechnical and hydrogeological investigation will be completed for the preliminary preferred site for a new water storage tank identified though this study to determine design requirements, as well as construction needs (e.g., dewatering quantities). Any information resulting from this work that impacts the recommended preliminary preferred solution will be incorporated into the recommendation as the Project proceeds through preliminary and detailed design phases of the Project.

Table 3-5: Species at Risk Probability Occurrence at Each Site

Site 1	Site 2	Site 3
■ Eastern Hog-nosed Snake The Site was located within an agricultural field with row crop and was unlikely to support most SAR. However, given that MECP indicated that this site is located within general habitat protection of an Eastern Hog-nosed Snake and that the Site contains sandy soil substrate suitable for nesting and is located within 100 m of adjacent woodland area which may provide suitable habitat for this species (COSEWIC, 2021), it is possible that Eastern Hog-nosed Snake may be encountered on-site moving through the area.	■ Eastern Small-footed Myotis ■ Little Brown Myotis ■ Northern Myotis ■ Tri-coloured bat ■ Red-headed Woodpecker ■ Blanding's Turtle ■ Eastern Hog-nosed Snake The Cultural Woodland (CUW1) may support SAR bats as suitable roost trees were identified on site. Red-headed Woodpecker may also use the CUW1 for nesting and foraging. Eastern Hog-nosed Snake may be present within the suitable habitat along wooded community edges and shrub area. The wetland community on-site was found to be unsuitable for Species at Risk turtle basking or overwintering as no water and soft mud substrate was present. However, the wetland community (MAS2-1), part of the Provincially Significant Wetland, and located outside but within 100 metres of the site may provide suitable habitat for basking and overwintering as open water was observed. Nesting habitat was identified to be present on-site in the Mineral Cultural Meadow / Thicket mosaic (CUM1-1/CUT1-1). Therefore, Species at Risk turtles may be present surrounding the site and nest within this site.	■ Eastern Small-footed Myotis ■ Little Brown Myotis ■ Northern Myotis ■ Tri-coloured bat ■ Red-headed Woodpecker ■ Eastern Hog-nosed Snake The Site included a Cultural Coniferous Plantation (CUP3) that may support SAR bats that roost and Red-headed Woodpecker that nest in woodlands. Eastern Hog-nosed Snake may be present within the suitable habitat along wooded community edges and openings.

3.4 Socio-Economic Environment

The following summarizes the Socio-economic environment for the three potential sites:

- **Site 1**
  - Designated Residential as per the current City of Brantford Official Plan (August 2021 Consolidation)
  - Situated within an agricultural field directly adjacent to residential properties
  - Located across the road from the Walter Gretzky Municipal Golf Course
- **Site 2**
  - Designated Intensification Corridor and is situated along the edge of the Core Natural Areas as per the current City of Brantford Official Plan (August 2021 Consolidation)
  - No existing development on site
  - Adjacent to single family residential dwelling
- **Site 3**
  - Designated Intensification Corridor as per the current City of Brantford Official Plan (August 2021 Consolidation)
  - Site includes residential property with woodlands, as well as agricultural field
  - Adjacent to single family residential dwelling and local business

3.5 Cultural Heritage Environment

The following describes the cultural heritage resources related to the potential sites for a new water storage tank presented in **Section 6.1**. Cultural heritage resources include archaeological resources, built heritage resources and cultural heritage landscapes.

3.5.1 Archaeological Resources

A Stage 1 Archaeological Assessment (PIF number P438-0275-2021) has been completed by AECOM to evaluate the archaeological potential within the Study Area related to the siting options for a new water storage tank as presented in **Section 6.1**.

A Stage 1 Archaeological Assessment consists of a review of geographic, land use and historical information for the property and the relevant surrounding area, and contacting Ministry of Citizenship and Multiculturalism to find out whether, or not, there are any known archaeological sites on or near the property. Its purpose is to identify areas of archaeological potential and further archaeological assessment (e.g., Stage 2-4) as necessary. The Stage 1 Archaeological Assessment report is included in **Appendix E**.

Based on a review of the historical, environmental, and archaeological context of the General Study Area and the subsequent property inspection of the Siting Areas, AECOM has determined that potential for the recovery of pre- and post-contact Indigenous and 19th century Euro-Canadian archaeological resources within the General Study Area boundaries is high. As such, Stage 2 archaeological assessment is recommended for all potentially undisturbed areas within the General Study Area, as illustrated in Figure 7 of **Appendix E**. Areas where archaeological potential has been removed (disturbed) include areas that have been subject to extensive land alterations that have significantly compromised the recovery of archaeological materials such as constructed roadways.

The Stage 2 archaeological assessment must be conducted by a licensed archaeologist and must follow the requirements set out in the Standards and Guidelines for Consultant Archaeologists (Ontario Government 2011), including:

- The standard test pit survey method at 5 metre intervals is to be conducted in all areas that will be impacted by the project where ploughing is not feasible (e.g., woodlots, overgrown areas, manicured lawns, small sections of agricultural land)
- Pedestrian survey at 5 metre intervals where ploughing is possible (e.g., agricultural fields). This assessment will occur when agricultural fields have been recently ploughed, weathered by rain, and exhibit at least 80% surface visibility
- Poorly drained areas, areas of steep slope, and areas of confirmed previous disturbance (e.g., building footprints, roadways, areas with identifiable underground infrastructure) are to be mapped and photo-documented but are not recommended for Stage 2 survey as they possess low to no archaeological potential

Siting Area 3 within the general Study Area has already been assessed by Lincoln Environmental Consulting Corporation (LEC *forthcoming)*. However, at the time of the preparation of AECOM's Stage 1 report, the Stage 1-2 report completed by LEC had not yet been accepted into the Ontario Public Register of Archaeological Reports. For this reason, LEC's results have not been included in AECOM's results mapping (Figure 7 in **Appendix E**), as these findings have not yet been reviewed and accepted by the Ministry of Citizenship and Multiculturalism. Consequently, no ground-disturbing activities should take place within the larger Siting Area 3 General Study Area or within Siting Area 3 until LEC's report has been accepted into the Register. Further, a pre-contact scatter site, Location 1 (AhHb-262) has been identified outside of Siting Area 3, but it is still within the same larger General Study Area and requires further Stage 3 site-specific assessment. Stage 3 site-specific assessment will need to be conducted by a licensed archaeologist to address all archaeological concerns at Location 1 (AhHb-262), following LEC's recommendations, once they also have been reviewed by the Ministry of Citizenship and Multiculturalism, in addition to the requirements set out in Standards and Guidelines for

Consultant Archaeologists (Ontario Government 2011), and prior to any ground-disturbing activities. However, AECOM's Siting Area 3 was cleared of archaeological concern based on LEC's Study Area, and no further work was recommended. As such, ground-disturbing activities will be permitted to take place within Siting Area 3 once LEC's Stage 1-2 Archaeological Assessment report has been reviewed by the Ministry of Citizenship and Multiculturalism and accepted into the Register.

The Stage 1 Archaeological Assessment report has been entered into the Ontario Public Register of Archaeological Reports without technical review (see **Appendix E**).

3.5.2 Built Heritage Resources and Cultural Heritage Landscapes

A desktop review screening for cultural heritage resources (**Appendix F**) was completed to identify built heritage resources and/or cultural heritage landscapes within and/or adjacent to the proposed alternatives within the Study Area. The Ministry of Citizenship and Multiculturalism Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes was used to complete the desktop Cultural Heritage Screening Report to help determine whether this Municipal Class Environmental Assessment project may impact cultural heritage resources. If the project impacts known or potential cultural heritage resources, then the Ministry of Citizenship and Multiculturalism recommends a Heritage Impact Assessment be completed to assess potential impacts on the cultural heritage resource.

The following recommendations have been developed based on the results of the completion of the checklists, the historical map review, and the preliminary impact assessment undertaken for this study:

- Based on the preliminary impact assessment, Sites 2 and 3 will not directly or indirectly impact any built heritage resources or cultural heritage landscapes. Therefore, no further work is required. It is recommended that the new water storage tank to be built on either Site 2 or Site 3 in order to avoid a heritage property.
- Based on the preliminary impact assessment undertaken for this Report, Site 1 will directly impact Built Heritage Resource 1, a potential built heritage resource located at 505 Powerline Road. If Site 1 is identified as the preferred site for the location of a water storage tank, a Cultural Heritage Evaluation Report should be completed to determine the cultural heritage value or interest of the property. The Cultural Heritage Evaluation Report will evaluate the property utilizing Ontario Regulation 9/06 of the *Ontario Heritage Act*. A Heritage Impact Assessment may be required for the property if it is determined to have cultural heritage value or interest, to address property-specific impacts of the preferred site and provide recommendations for its mitigation.

4. Policy Context

4.1 Provincial Policy Statement

The Provincial Policy Statement provides provincial policy direction on matters related to land use planning and development that affect communities, such as ensuring the appropriate infrastructure is available to accommodate current and future needs. The current Provincial Policy Statement came into effect on May 1, 2020, replacing the 2014 Provincial Policy Statement, and applies to planning decisions made on or after that date.

The key sections of policies applicable to this study are as follows:

- 1.1 Managing and Directing Land Use to Achieve Efficient and Resilient Development and Land Use Patterns
- 1.2 Coordination
- 1.6 Infrastructure and Public Service Facilities
- 2.1 Natural Heritage
- 2.6 Cultural Heritage and Archaeology
- 3.0 Protecting Public Health and Safety

Relevance to this study: Pursuant to Policy 1.2.1, this study is consistent with the Provincial Policy Statement through the implementation of a coordinated, integrated and comprehensive approach to dealing with infrastructure.

Subsection 1.6.6 of the Provincial Policy Statement outlines the policies for sewage and water. Policy 1.6.1.1 states “Planning for sewage and water services shall:

a) direct and accommodate expected growth or development in a manner that promotes the efficient use and optimization of existing:
    1. municipal sewage services and municipal water services; and
    2. private communal sewage services and private communal water services, where municipal sewage services and municipal water services are not available;

b) ensure that these systems are provided in a manner that:
    1. can be sustained by the water resources upon which such services rely;
    2. is feasible, financially viable and complies with all regulatory requirements; and
    3. protects human health and the natural environment;

c) promote water conservation and water use efficiency;

d) integrate servicing and land use considerations at all stages of the planning process; and

e) be in accordance with the servicing hierarchy outlined through policies 1.6.6.2, 1.6.6.3, 1.6.6.4 and 1.6.6.5."

Consistent with the Provincial Policy Statement the siting options, as described in **Section 6,** were reviewed on the basis of feasibility, cost and compliance with regulatory requirements. The natural environment and land use considerations were also important factors in evaluating the siting options for a new water storage tank.

4.2 A Place to Grow: Growth Plan for the Greater Golden Horseshoe

The Growth Plan for the Greater Golden Horseshoe (Office Consolidation 2020) was established by the Ontario government to provide a framework for municipalities to implement Ontario's vision for stronger communities and growth management throughout the region. The goal of the Growth Plan for the Greater Golden Horseshoe is to focus growth in compact development patterns, offer a variety of housing options, and mixed-use development within 'Urban Growth Centres'. The Plan sets out minimum density targets for jobs and residents per hectare in 'Urban Growth Centres'.

The infrastructure framework in the Growth Plan requires that an integrated approach to land use planning, infrastructure investments, and environmental protection is undertaken to achieve the outcomes of the Plan.

Relevance to this study: The Study Area is situated within the Greater Golden Horseshoe Growth Plan Area. The polices in the Growth Plan were considered when siting a new water storage tank.

4.3 City of Brantford Official Plan

The City of Brantford Official Plan (September 2022 Office Consolidation) contains policies about how land within the municipality may develop and be used in the future.

Section 8.1 of the Official Plan contains policies pertaining for water servicing infrastructure:

j. Development shall provide appropriate water servicing infrastructure as approved by the City and, where necessary, the Conservation Authority and the Province.

k. The City shall direct and accommodate growth in a manner that promotes the efficient use of water and maintains water quality in accordance with Provincial regulations.

l. Water servicing infrastructure shall be designed, constructed and maintained to:

   i. Provide adequate service to proposed developments;
   ii. Provide sufficient quantity and flow to meet capacity for domestic use and fire protection;
   iii. Accommodate full development of the service area; and,
   iv. Satisfy the servicing standards of the City.

Development shall also be consistent with the requirements and guidelines in the City's Master Servicing Plan (as described in **Section 3.1** of this report).

Pursuant to Section 5.1 (General Provisions for All Land Use Designations) Public service facilities and other infrastructure are permitted within all of the land use designations, with the exception of the Core Natural Areas Designation and the Adjacent Lands Overlay. These uses may be permitted within the Core Natural Areas Designation and the Adjacent Lands Overlay, subject to the applicable policies of the Official Plan.

Relevance to this study: The Official Plan was considered in the evaluation of siting options for a new water storage tank. As per Schedule 1 (Growth Management), the three potential sites are located within Designated Greenfield Area in addition to Neighbourhoods (Site 1), Strategic Growth Areas (Sites 2 and 3), and directly adjacent to Core Natural Areas (Site 2).

The Land Use Plan (Schedule 3) designations for the three sites are Residential (Site 1), Intensification Corridor (Sites 2 and 3), and directly adjacent to Core Natural Areas (Site 2).

Site 2 is within the adjacent lands overlay to the Core Natural Areas Designation (Schedule 6) and at the edge of the Floodplain (Schedule 7-1) and within Intake Protection Zone with a vulnerability score of less than 8 (Appendix A-1).

Public Service Facilities, such as a new water storage tank, are a permitted use in any land use designation in the Official Plan, with the exception of natural heritage areas or the adjacent lands overlay.

The preferred solution will be designed, constructed and maintained to provide adequate service with consideration of future growth demand with accommodation for future additional storage (in-ground or elevated, to be determined), pending growth demand.

4.4 City of Brantford Zoning Bylaw

The City's Zoning By-law guides the development of properties. The By-law sets out land use and development requirements, including property use, location and size, building height, and parking and open space requirements.

Relevance to this study: Section 6.19 of the Zoning By-law regulates public services and a new water storage tank is permitted in all Zones; however, the proposed infrastructure will be subject to further provisions of the By-law (e.g., height, setbacks). The City's Planning and Development department will review the plans for the new water storage tank during the detailed design phase to confirm the requirements of the site.

4.5 The Grand River Conservation Authority Requirements

The Grand River Conservation Authority (GRCA) is authorized by the Development, Interference with Wetlands and Alterations to Shorelines and Watercourse Regulation (Ontario Regulation 152/06 also known as the "Generic Regulation"). These Regulations, passed under the Conservation Authorities Act, regulate natural and hazardous areas such as areas within and adjacent to rivers or stream valleys, areas that are subject to the hazards of flooding and erosion, and areas within and adjacent to wetlands areas.

Relevance to this study: Site 2 is partially located within the regulated area for the Grand River Conservation Authority due to the wetland located to the west of the site. Site 2 being adjacent to a wetland would not prevent the development of a new water storage tank; however, should Site 2 be selected as the preferred solution, further consultation with the Grand River Conservation Authority would be necessary to confirm requirements and additional work for the site.

Site 1 and Site 3 are not located within the regulated area.

4.6 Grand River – Approved Source Protection Plan

Section A.2.10.6 of the Municipal Class Environmental Assessment manual directs proponents, including the City, to consider Source Water Protection in the context of the *Clean Water Act*, 2006. Projects proposed within a Source Water Protection vulnerable area are required to consider policies in the applicable Source Protection Plan including their impact with respect to the project. A watershed-based Source Protection Plan contains policies to reduce existing and future threats to drinking water in order to safeguard human health through addressing activities that have the potential to impact municipal drinking water systems. The Grand River Source Protection Plan is the

relevant Source Protection Plan for this project, and contains policies that address current and future threats to municipal drinking water supply within the Grand River watershed.

An update of the Grand River Source Protection Plan came into effect February 15, 2022. The plan has two volumes:

- Volume 1 provides the history of source protection planning and the Clean Water Act, Source Protection Plan objectives, and description of the watershed
- Volume 2 contains the plan policies listed by municipality. Chapter 15 contains the policies for the City of Brantford

There are four types of vulnerable areas covered by the Grand River Source Protection Plan:

1. **Intake protection zones** – An intake protection zones is the area around a surface body of water where water is drawn in and conveyed for municipal drinking water
2. **Highly vulnerable aquifers** – Aquifers are underground layers of water that supply wells. Highly vulnerable aquifers are susceptible to contamination due to their proximity to the ground surface or where the types of materials in the ground around it are highly permeable.
3. **Significant groundwater recharge areas** – Significant groundwater recharge areas are characterized as having porous soils (e.g., sand or gravel), which allow for water to easily seep into the ground and flow to an aquifer.
4. **Wellhead protection areas** – Wellhead protection areas are areas of land around a municipal well where land use activities have the greatest potential to affect the quality of water flowing into the well.

Relevance to this study: Site 2 is partially located within Intake Protection Zone 3 with a vulnerability score of less than 8. A Source Protection Restricted Land Use Declaration Form will be required during detailed design if Site 2 is selected as the preferred solution based on its location in the IPZ-3. Once the form is reviewed, a notice under the *Clean Water Ac*t is issued that will state any requirements that are necessary for the application to proceed.

Site 1 and Site 3 are located outside of vulnerable areas.

5. Phase 1: Problem or Opportunity Statement

Phase 1 of the five-phase Municipal Class Environmental Assessment planning process requires the proponent of an undertaking (i.e., the City) to first document factors leading to the conclusion that the improvement is needed, and to develop a clear statement of the identified problems or opportunities to be addressed. As such, the problem or opportunity statement is the main starting point in the undertaking of a Municipal Class Environmental Assessment and becomes the central theme and integrating element of the Project. It also assists in setting the scope of a Municipal Class Environmental Assessment study.

The following problem or opportunity statement has been developed for this Municipal Class Environmental Assessment study:

Problem

- Significant growth is expected in the City of Brantford (the City) which includes the recent northerly urban expansion area, as well as lands within the current City's northern urban boundary.
- The City's recent Water, Wastewater and Stormwater Master Servicing Plan 2051 Amendment provides strategic direction for the City's future water distribution system including maintaining or modifying current pressure district boundaries and providing required storage in each pressure district for projected growth to 2051.
- In order to service existing and future residents in the City's Pressure District 2/3, the Master Servicing Plan identifies the need for additional storage, which requires siting a new water storage tank along with associated watermains and determining pump station upgrade requirements to facilitate the additional storage tank.
- The King George Elevated Tank is reaching the end of its useful life and requires substantial capital investment to maintain its operation.

Opportunity

- Complete the Schedule B Municipal Class Environmental Assessment planning process in consultation with key stakeholders, review agencies, and Indigenous Communities in order to provide a viable short and long term solution that can be logically phased to address the need for storage in the City's Pressure District 2/3, taking into account that the existing King George Elevated Tank is reaching the end of its useful life.

6. Phase 2: Alternative Solutions

6.1 Alternatives

The siting of a water storage tank involves a two-step evaluation process. The feasibility study was undertaken as the initial step of the evaluation process, to identify and screen a long list of potential sites for a new water storage tank based on a site selection planning exercise that details minimum requirements. Phase 2 of this Municipal Class Environmental Assessment process is the second step of the two-step process and is focused on evaluating the three short listed siting options (i.e., Sites 1, 2 and 3) for a new water storage tank from the initial screening and selecting a preferred solution to advance to design and construction.

6.2 Evaluation Criteria and Methodology

To identify the recommended preferred site for a new water storage tank, criteria (**Table 6-1**) have been developed to evaluate the Phase 2 alternative solutions (Sites 1, 2 and 3) carried forward for detailed evaluation.

Table 6-1: Criteria to Evaluate Short-listed Sites

Category	Criteria
Land Use	■ Potential effects on existing or approved/planned land uses ■ Potential for conforming with provincial and municipal plans and policies ■ Anticipated Site Plan approval and land acquisition requirements, including property owner willingness to sell land
Technical	■ Constructability ■ Impact on operations and maintenance ■ Access ■ Future infrastructure coordination opportunities or implementation risks ■ Traffic impacts during construction, including expected lane/sidewalk closures and disruption to public transit
Natural Environment	■ Potential effects on terrestrial habitat and species ■ Potential effects on aquatic habitat and species ■ Potential effects on Species at Risk and their habitat ■ Potential effects on surface and groundwater ■ Potential to encounter soil and water contamination ■ Anticipated environmental permitting and approval considerations
Socio-Economic Environment	■ Disruption to residences, institutions, businesses, recreational facilities during construction (noise, air, vibration, access)
Climate Change	■ Potential carbon footprint (e.g., energy usage, use of construction materials, construction methods and operations). ■ Potential resilience to extreme weather events

Category	Criteria
Cultural Heritage Environment	■ Potential effects on archaeological resources and areas of archaeological potential ■ Potential effects on built heritage resources and cultural heritage landscapes
Cost	■ Cost of construction ■ Cost of operations and maintenance

A comparative evaluation has been completed for Sites 1, 2 and 3 using the above noted criteria, and sites were rated based on their potential constraints relative to the other alternatives as follows:

- High Constraints (Less Preferred)
- Medium Constraints (Moderately Preferred)
- Low Constraints (More Preferred)

6.3 Evaluation of Siting Options for a New Water Storage Tank

Table 6-2 details the comparative evaluation and summary of results for Sites 1, 2 and 3 which are conceptually shown in **Figure 1-1**. The evaluation has been informed through documentation of existing conditions and consideration of feedback from potentially affected and interested agencies and stakeholders.

Table 6-2: Evaluation of Siting Options

Category	Criteria	Site 1: Powerline Road	Site 2: West side of King George Road	Site 3: East side of King George Road
Land Use	Potential effects on existing or approved/ planned land uses	■ Property includes agricultural field and existing residential dwelling	■ Property is currently underutilized and has the potential to be redeveloped ■ Use of this property for a new water storage tank impacts potential for future alternate uses	■ Property includes agricultural field and recently sold residential dwelling ■ Use of this property for a new water storage tank impacts potential for future alternate uses
Land Use	Potential for conforming with provincial and municipal plans and policies	■ Proposed use is anticipated to conform with approved plans and policies ■ Siting a new water storage tank is a permitted use; considered a “Public Service” under the by-law	■ Proposed use is anticipated to conform with approved plans and policies ■ Site 2 aligns with the general conceptual siting area identified in the City of Brantford Water, Wastewater and Stormwater Master Servicing Plan Update ■ Siting a new water storage tank is a permitted use; considered a “Public Service” under the by-law	■ Proposed use is anticipated to conform with approved plans and policies ■ Siting a new water storage tank is a permitted use; considered a “Public Service” under the by-law
Land Use	Anticipated Site Plan approval and land acquisition considerations, including property owner willingness to sell land	■ Site Plan approval required ■ Requires purchase of private property ■ Property owner is not a willing host ■ No permanent or temporary working easement(s) anticipated to be required	■ Site Plan approval required ■ Requires purchase of private property ■ Property owner indicated potential interest in siting of a water storage tank on the property; however, prefers to sell entire 83 acres ■ No permanent or temporary working easement(s) anticipated to be required	■ Site Plan approval required ■ Requires purchase of private property ■ Property owner is a willing host, subject to negotiations with the City ■ No permanent or temporary working easement(s) anticipated to be required
Land Use	Evaluation Ranking	High Constraints (Less Preferred)	Medium Constraints (Moderately Preferred)	Low Constraints (More Preferred)
Technical Environment	Constructability	■ Moderate site elevation (approximately 228 to 230 metres) for constructability of the new water storage tank ■ Not in close proximity to large diameter watermains ■ Located outside of Pressure District 2/3 and requires approximately 1 km of new watermain to connect to Pressure District 2/3	■ Moderate site elevation (approximately 229 to 232 metres) for constructability of the new water storage tank ■ Close proximity to 400 millimetres diameter watermains and area to be serviced, as well as future proposed watermains north of Powerline Road ■ Located within Pressure District 2	■ Moderate site elevation (approximately 225 to 232 metres) for constructability of the new water storage tank ■ Close proximity to 400 millimetres diameter watermains and area to be serviced, as well as future proposed watermains north of Powerline Road ■ Located along the northern boundary of Pressure District 2
Technical Environment	Impact on operations and maintenance	■ Further away from area to be serviced compared to Sites 2 and 3 ■ Requires service of additional dedicated watermain and appurtenances ■ Large storage tank requires frequent cycling to increase volume turnover and reduce potential water quality concerns ■ Additional maintenance required for additional 1 kilometre watermain to the tank from King George Road	■ Close to the area to be serviced ■ Large storage tank requires frequent cycling to increase volume turnover and reduce potential water quality concerns	■ Close to the area to be serviced ■ Large storage tank requires frequent cycling to increase volume turnover and reduce potential water quality concerns
Technical Environment	Access	■ Provides for good access from Powerline Road	■ Provides for good access from King George Road	■ Provides for good access from King George Road
Technical Environment	Future infrastructure coordination opportunities or implementation risks	■ Coordination required for decommissioning of King George ET when new facility is constructed ■ Watermain commissioning to be in line with City requirements for watermain construction and commissioning ■ Implementation risks related to potential construction of one large tank at a height of 53 metres	■ Coordination required for decommissioning of King George ET when new facility is constructed ■ Implementation risks related to potential construction of one large tank at a height of 53 metres	■ Coordination required for decommissioning of King George ET when new facility is constructed ■ Implementation risks related to potential construction of one large tank at a height of 53 metres

Category	Criteria	Site 1: Powerline Road	Site 2: West side of King George Road	Site 3: East side of King George Road
Technical Environment	Implementation timing-ability to meet fast in-service date	■ Similar timing anticipated to be required for all sites to accommodate construction of new water storage tank ■ Anticipate more time to negotiate purchase of property and construct associated watermain component	■ Similar timing anticipated to be required for all sites to accommodate construction of new water storage tank ■ Anticipate more time to negotiate purchase of property	■ Similar timing anticipated to be required for all sites to accommodate construction of new water storage tank ■ Anticipate less time to negotiate purchase of property (willing host, subject to negotiation with the City)
Technical Environment	Traffic impacts during construction, including expected lane/sidewalk closures and disruption to public transit	■ Minimal traffic impacts anticipated during construction of the new water storage tank ■ Potential lane closures anticipated for the watermain component ■ No impacts to public transit anticipated	■ Minimal traffic impacts anticipated during construction ■ No lane closures anticipated ■ No impacts to public transit anticipated	■ Minimal traffic impacts anticipated during construction ■ No lane closures anticipated ■ No impacts to public transit anticipated
Technical Environment	Evaluation Ranking	High Constraints (Less Preferred)	Medium Constraints (Moderately Preferred)	Low Constraints (More Preferred)
Natural Environment	Potential effects on terrestrial habitat and species	■ The site is entirely within an agricultural field. Crop inventory from Agriculture and Agri-Food Canada (AAFC) in 2020 identified soybean and corn was grown in this field. The agricultural field is likely not suitable for Species at Risk. However, the potential for Species at Risk exists if the field is no longer being used for row crop. At the time of the 2022 site visit, this field was tilled ■ The site is adjacent to a pond and watercourse ■ Confirmed habitat for one Species of Conservation Concern: Small Mulberry Borer was observed in the hedgerow (CUH) located outside of the Site but immediately adjacent running parallel to Powerline Road. Tree removal should avoid removal of Mulberry trees within this hedgerow to the extent possible ■ Potential effects may include the following: – Incidental take or destruction of bird nests protected under the Migratory Birds Convention Act, 1994 (MBCA) if vegetation (i.e., ground cover, shrubs, trees) removal is not scheduled outside of the breeding bird season (April 1 and August 31) – Construction activities have potential to cause disturbance, such as increased noise, to wildlife such as breeding birds and other residential wildlife within the adjacent natural heritage areas – Potential harm and/or mortality of wildlife during construction – Introduction and spread of invasive species	■ The site is adjacent a wetland and consists of naturalized communities. Meadow marsh, cultural meadow, cultural woodlands and swamp thickets are present onsite ■ The site is adjacent (50 metres) to the Cold Spring Creek Provincially Significant Wetland Complex and a watercourse that runs through the Provincially Significant Wetland ■ Site is within Grand River Conservation Authority Regulation Limit ■ Site is within the City's Natural Heritage System ■ The following candidate Significant Wildlife Habitats may be present on site: – Raptor Wintering Area – Bat Maternity Colony – Snake Hibernaculum – Turtle Nesting Area – Amphibian Breeding Habitat (Wetlands) – Grasshopper Sparrow – Eastern Wood Pewee – Western Chorus Frog - Great Lakes - St. Lawrence - Canadian Shield population – Common Snapping Turtle ■ Monarch habitat has been confirmed on site ■ Potential effects may include the following: – Habitat loss or site alteration – Vegetation removal for construction will result in temporary or permanent habitat loss of candidate Significant Wildlife Habitat – Incidental take or destruction of bird nests protected under the Migratory Birds Convention Act, 1994 (MBCA) if vegetation (i.e., ground cover, shrubs, trees) removal is not scheduled outside of the breeding bird season (April 1 and August 31) – Construction activities have potential to cause disturbance, such as increased noise, to wildlife such as breeding birds and other residential wildlife within the adjacent natural heritage areas – Potential harm and/or mortality of wildlife during construction – Introduction and spread of invasive species	■ The site is a residential property that contains an agricultural field as well as a cultural coniferous plantation located north and south of the driveway ■ Crop inventory from Agriculture and Agri-Food Canada (AAFC) in 2020 identified soybean was grown in the agricultural field and confirmed in the field in 2022. The agricultural field is likely not suitable for Species at Risk. However, the potential for Species at Risk exists if the field is no longer being used for row crop ■ Tree removals will be required to construct the water storage tank. ■ The following candidate Significant Wildlife Habitats may be present on site: – Bat Maternity Colony ■ Potential effects may include the following: – Habitat loss or site alteration – Incidental take or destruction of bird nests protected under the Migratory Birds Convention Act, 1994 (MBCA) if vegetation (i.e., ground cover, shrubs, trees) removal is not scheduled outside of the breeding bird season (April 1 and August 31) – Construction activities have potential to cause disturbance, such as increased noise, to wildlife such as breeding birds and other residential wildlife within the adjacent natural heritage areas – Potential harm and/or mortality of wildlife during construction – Introduction and spread of invasive species

Category	Criteria	Site 1: Powerline Road	Site 2: West side of King George Road	Site 3: East side of King George Road
Natural Environment	Potential effects on aquatic habitat and species	■ No aquatic Species at Risk records have been identified within the site	■ No aquatic Species at Risk records have been identified within the site	■ No aquatic Species at Risk records have been identified within the site
Natural Environment	Potential effects on Species at Risk and Species at Risk habitat	■ The following Species at Risk may be affected by development of the site: – Eastern Hog-nosed Snake ■ The Ministry of the Environment, Conservation and Parks identified Site 1 to be located within the general habitat protection of Eastern Hog-nosed Snake; although Site 1 predominately consist of an agricultural field, this species may be encountered as it is moving between suitable habitats	■ The following Species at Risk may be affected by development of the site: – Red-headed Woodpecker – Eastern Small-footed Myotis – Little Brown Myotis – Northern Myotis – Tri-coloured bat – Blanding's Turtle – Eastern Hog-nosed Snake ■ The Ministry of the Environment, Conservation and Parks identified Site 2 to be located within the general habitat protection of Eastern Hog-nosed Snake	■ The following Species at Risk may be affected by development of the site: – Eastern Small-footed Myotis – Little Brown Myotis – Northern Myotis – Tri-coloured bat – Red-headed Woodpecker – Eastern Hog-nosed Snake ■ The Ministry of the Environment, Conservation and Parks identified Site 3 to be located within the general habitat protection of Eastern Hog-nosed Snake
Natural Environment	Potential to encounter soil and water contamination and waste disposal	■ Low potential to encounter soil and water contamination anticipated – to be confirmed for the preferred site during geotechnical investigation planned for preliminary or detailed design	■ Low potential to encounter soil and water contamination anticipated – to be confirmed for the preferred site during geotechnical investigation planned for preliminary or detailed design	■ Low potential to encounter soil and water contamination anticipated – to be confirmed for the preferred site during geotechnical investigation planned for preliminary or detailed design
Natural Environment	Anticipated environmental permitting and approval considerations	■ Vegetation removal should be scheduled outside of the breeding bird season (April 1 to August 31)	■ Vegetation removal should be scheduled outside of the breeding bird season (April 1 to August 31) and bat active season (April 1 to September 1) ■ Grand River Conservation Authority may request an evaluation of potential impacts with the site being located to a wetland and as it is partially situated within the regulated area ■ If tree removal occurs within the cultural woodland, additional species-specific surveys targeting presence of Species at Risk bats and butternuts may be required in order to confirm whether permits and authorization under the Endangered Species Act are required ■ Authorization under the Endangered Species Act may be required if Blanding's Turtles are confirmed to use suitable nesting areas within the Site and impacts to these cannot be avoided	■ Vegetation removal should be scheduled outside of the breeding bird season (April 1 to August 31) and bat active season (April 1 to September 1) ■ If tree removal occurs within the cultural coniferous plantation, additional species-specific surveys targeting presence of Species at Risk bats and butternuts may be required in order to confirm whether permits and authorization under the Endangered Species Act are required
Natural Environment	Potential effects on surface water and groundwater	■ Potential for dewatering during construction – to be confirmed for the preferred site during hydrogeological investigation planned for detailed design ■ No direct impacts on surface water anticipated ■ Located outside vulnerable source water protection areas ■ Dewatering and stormwater management to be in line with Best Management Practices for Erosion and Sediment Control	■ Potential for dewatering during construction – to be confirmed for the preferred site during hydrogeological investigation planned for detailed design ■ Potential impacts on surface water anticipated ■ Located adjacent to Intake Protection Zone 3 ■ Dewatering and stormwater management to be in line with Best Management Practices for Erosion and Sediment Control	■ Potential for dewatering during construction – to be confirmed for the preferred site during hydrogeological investigation planned for detailed design ■ No direct impacts on surface water anticipated ■ Located outside vulnerable source water protection areas ■ Dewatering and stormwater management to be in line with Best Management Practices for Erosion and Sediment Control
Natural Environment	Evaluation Ranking	Low Constraints (More Preferred)	High Constraints (Less Preferred)	Medium Constraints (Moderately Preferred)

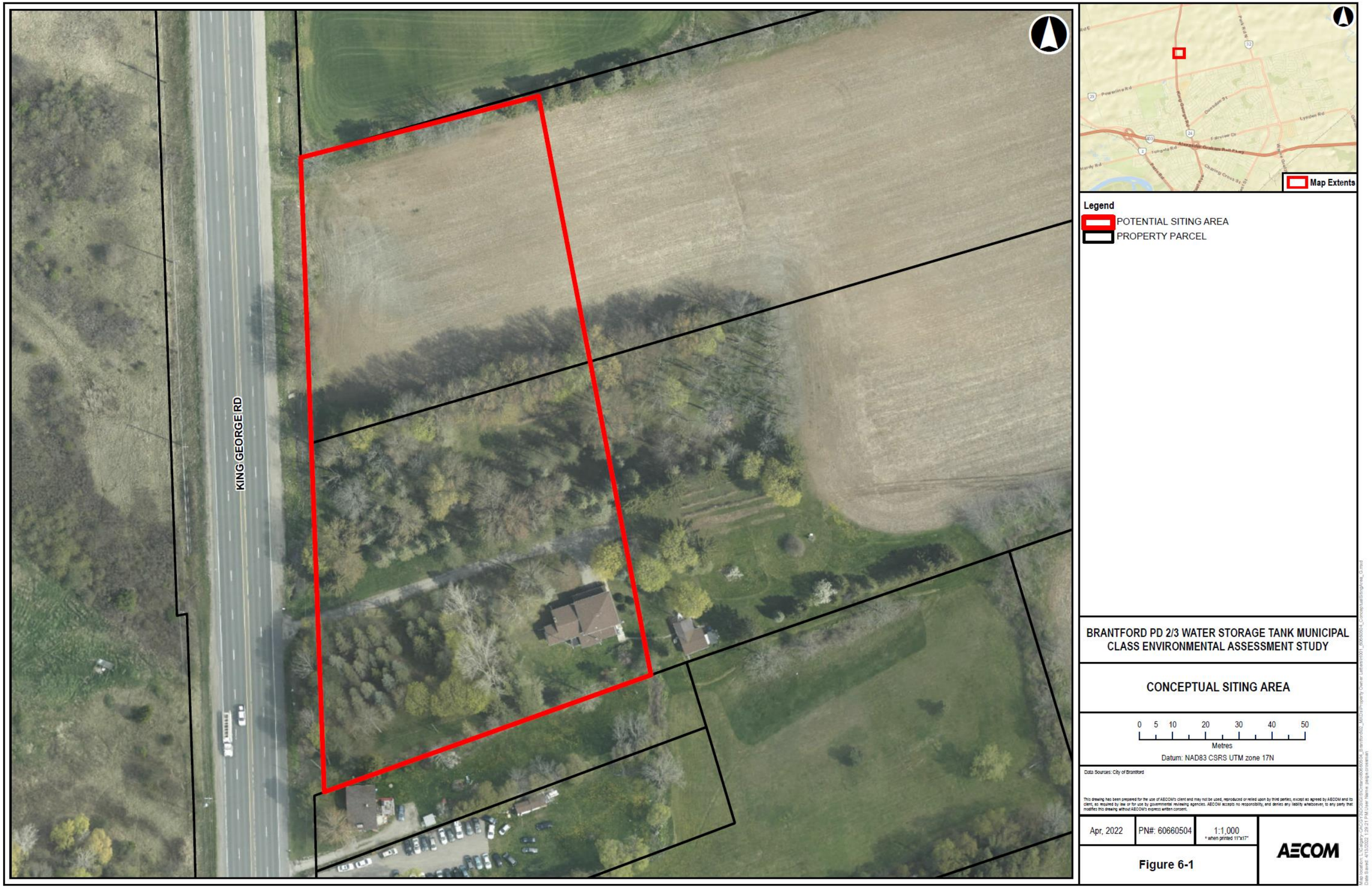
Category	Criteria	Site 1: Powerline Road	Site 2: West side of King George Road	Site 3: East side of King George Road
Socio-Economic Environment	Disruption to residences, institutions, businesses, recreational facilities during construction (noise, air, vibration, access)	■ Disruption to existing property owner with water storage tank located on subject lands ■ Temporary disruption to adjacent property owners and golf course opposite to the site ■ No disruptions anticipated to existing residential access located on the subject lands	■ Temporary disruption to existing surrounding property owners and businesses ■ Site largely avoids existing residential areas	■ Temporary disruption to existing surrounding property owners and businesses ■ Site largely avoids existing residential areas ■ Existing residential dwelling on site has been recently sold (potential to be removed from the site in the future)
Socio-Economic Environment	Evaluation Ranking	Medium Constraints (Moderately Preferred)	Low Constraints (More Preferred)	Low Constraints (More Preferred)
Climate Change	Potential carbon footprint (e.g., energy usage, use of construction materials, construction methods and operations)	■ Similar carbon footprint related to construction materials for tank for all sites ■ Higher carbon footprint due to additional watermain construction requirement	■ Similar carbon footprint related to construction materials for tank for all sites	■ Similar carbon footprint related to construction materials for tank for all sites ■ Future potential in-ground storage will require more energy to pump to 283 metres HGL for Pressure District 2/3
Climate Change	Potential resilience to extreme weather events	■ Similar resilience to extreme weather events for all sites - all sites will be designed as per the required standards	■ Similar resilience to extreme weather events for all sites - all sites will be designed as per the required standards	■ Similar resilience to extreme weather events for all sites - all sites will be designed as per the required standards
Climate Change	Evaluation Ranking	Medium Constraints (Moderately Preferred)	Low Constraints (More Preferred)	Low Constraints (More Preferred)
Cultural Heritage Environment	Potential effects on archaeological resources and areas of archaeological potential	■ A Stage 2 Archaeological Assessment (and further assessments, if recommended) will be undertaken as early as possible during detailed design and prior to any ground disturbing activity as per the recommendations in the Stage 1 Archaeological Assessment Report (**Appendix E**)	■ A Stage 2 Archaeological Assessment (and further assessments, if recommended) will be undertaken as early as possible during detailed design and prior to any ground disturbing activity as per the recommendations in the Stage 1 Archaeological Assessment Report (**Appendix E**)	■ The site has been cleared of archaeological concern as per the Stage 1 Archaeological Assessment Report (**Appendix E**) ■ The Stage 1 Archaeological Assessment has been entered into the Ontario Public Register of Archaeological Reports
Cultural Heritage Environment	Potential effects on built heritage resources and cultural heritage landscapes	■ Direct impact to a potential built heritage resource located on the same property. ■ Requires a Cultural Heritage Evaluation Report (CHER) to be completed if selected as the preferred site to determine the cultural heritage value or interest of the property	■ No direct or indirect impact to built heritage resources or cultural heritage landscapes (no further cultural heritage work is required).	■ No direct or indirect impact to built heritage resources or cultural heritage landscapes (no further cultural heritage work is required).
Cultural Heritage Environment	Evaluation Ranking	High Constraints (Less Preferred)	Medium Constraints (Moderately Preferred)	Low Constraints (More Preferred)
Cost	Cost of construction	■ New 6ML water storage tank estimate: $12MM ■ Cost of watermain extension from King George Rd to tank is approximately $1.3MM ■ Plus cost of property acquisition (approximately 4 acres)	■ New 6ML water storage tank estimate: $12MM ■ Cost of watermain connection from facility to existing watermain (maximum 100 metres) is approximately $130,000 ■ Plus cost of property acquisition – previous owner indicated preference to sell entire property (approximately 85 acres) rather than only the 4 acres required	■ New 6ML water storage tank estimate: $12MM ■ Cost of watermain connection from facility to existing watermain (max 100 metres) is approximately $130,000 ■ Plus cost of property acquisition (approximately 4 acres)
Cost	Cost of operation / maintenance	■ Similar tank operation and maintenance costs for all sites ■ Additional cost for maintenance of additional 1 kilometre watermain to the tank from King George Road.	■ Similar tank operation and maintenance costs for all sites	■ Similar tank operation and maintenance costs for all sites
Cost	Evaluation Ranking	High Constraints (Less Preferred)	High Constraints (Less Preferred)	Medium Constraints (Moderately Preferred)
Overall	**Evaluation Ranking**	**High Constraints (Less Preferred)**	**Medium Constraints (Moderately Preferred)**	**Low Constraints (More Preferred)**

6.4 Preferred Solution and Rationale – Site 3

The rationale for selecting Site 3 (**Figure 6-1**) as the preliminary preferred solution is based on a combination of the following key factors:

- Elevation of the site (228 to 232 metres) is suitable for construction of an elevated tank
- Proximity to Pressure District 2/3 being serviced by the new water storage tank
- No extensive watermain infrastructure required. Site is near 400 millimetre diameter watermains, as well as future proposed watermains north of Powerline Road
- Property owner is a willing host for a new water storage tank based on preliminary discussions with the City
- Based on a desktop review, no aquatic species at risk records have been identified for this site
- The siting area largely avoids existing residential areas (no displacement to residential property on the existing site as the property has been sold) with minimal disruption to surrounding land uses (residential and businesses) anticipated during construction
- No known direct or indirect impact to built heritage resources or cultural heritage landscapes
- The site has been cleared of archaeological concern
- Fastest in-service date anticipated compared to other siting options
- Has sufficient acreage required to achieve planning setbacks, stormwater, water quality requirements, and flexibility for additional storage, if needed

Figure 6-1: Site 3 – Conceptual Siting Area



7. Preferred Undertaking – Project Description

7.1 Design Considerations

7.1.1 New Water Storage Tank

The preferred solution involves a new elevated water storage tank with accommodation for future additional storage (in-ground or elevated, to be determined), pending growth.

The Public Information Centre identified an 8ML elevated tank option as a preliminary size of storage, including cost estimate. However, after further review of storage needs and taking into consideration comments from key stakeholders, it has been concluded that a 6ML elevated tank would provide sufficient storage to satisfy short and medium term storage requirements with an option for an additional storage to be constructed on the same site to meet the storage requirements based on buildout population projections.

The exact location and additional details of the proposed elevated water storage tank will be determined through the conceptual design and operational strategy development phases of the Project. There will be consideration for aesthetic appeal and designated use of the space in the design of the site.

7.1.2 Watermain Connection

There is an existing 400 millimetre watermain on King George Road north of Powerline Road to which the proposed new water storage tank would connect. The conceptual design will consider the required upgrade of the existing 400 millimetre watermain, along with the upgrade requirement to the 400 millimetre watermain from Tollgate Pumping Station to Powerline Road.

7.1.3 Climate Change Considerations

Climate change considerations for the new water storage tank include ensuring that it is designed and built to include resiliency to more extreme storm events. These include:

- Stormwater management plan that uses updated IDF curves, which reflect the changes in storm frequency and intensity based on climate change projections
- Availability of adequate stormwater storage facility for emergency use

In addition, climate mitigation includes reduction of carbon emissions both during construction and over the long term operation of the water storage tank operations; these considerations include:

- Minimize potential effects during construction including the idling of construction equipment will be avoided, and equipment will be in good working order to reduce inefficiencies in the operation of the equipment.

- Optimize pumping and energy needs to ensure that energy is not wasted through pumping. For example, an elevated tank in Pressure District 2/3 has the advantage of feeding the pressure zone via gravity (stored energy) in contrast to an in-ground reservoir, which is fed through pumping from the Tollgate Pumping Station with water being pumped again to Pressure District 2/3 customers.

7.2 King George Elevated Tank

The King George Elevated tank will be decommissioned at the end of its useful life in the future for optimization of Pressure District 2/3 operations.

7.3 King George Elevated Tank, Tollgate and Wayne Gretzky Pumping Stations

Upgrade requirements at the Tollgate and Wayne Gretzky Pumping Stations will be confirmed through preliminary and detailed design.

7.3.1 Property and Easement Requirements

The City will need to acquire the approximately 1.62 hectare (4 acre) property identified as Site 3. For construction of the watermain connection, no permanent or temporary easements are anticipated.

7.4 Cost Estimate

The preliminary estimated cost for constructing a new 6ML elevated tank is $12MM in 2022 dollars. This estimate does not include costs associated with the future watermain connection and property acquisition. The preliminary cost estimate was updated based on more detailed information provided by the elevated tank supplier.

The cost estimate quoted above includes foundation, concrete support structure, steel tank and coatings, piping and mechanical works, standard accessories, electrical and controls works, site works for pre-and post-construction, and utility works. The preliminary cost estimate will be further refined after the detailed design is complete.

7.5 Permits and Approvals

The anticipated permits and approvals required prior to construction are summarized in **Table 7-1**. Permitting requirements will be confirmed during the preliminary and detailed design phase of the Project and where required, will require additional consultation with the applicable regulatory agencies.

Table 7-1: Anticipated Permits and Approvals

Permit/Approval	Timing
■ Site Plan approval and a building permit will be required for the new elevated water storage tank.	Detailed Design
■ A Permit to Take Water under the Ontario Water Resources Act (OWRA) may be required. A Permit to Take Water is required for any water takings that exceed 50,000 Litres per day, except for certain water taking activities that have been prescribed by the Water Taking EASR Regulation – O. Reg. 63/16. These prescribed water-taking activities require registration in the Environmental Activity and Sector Registry (EASR) instead of a Permit to Take Water. ■ The hydrogeological investigation will confirm whether construction dewatering is required.	Detailed Design
■ Contravention of the Migratory Birds Convention Act is not anticipated provided that any vegetation (e.g., ground cover, shrubs and trees) removal occurs outside of the breeding bird season (April 1 to August 31).	Detailed Design
■ There are no permits to be obtained under the Provincial Policy Statement, 2020; however, mitigation measures and best management practices will reduce the likelihood of, or minimize effects on identified Significant Wildlife Habitat.	Detailed Design
■ Authorization under the Endangered Species Act (ESA), 2007 may be required for the following Species at Risk if habitat identified cannot be avoided: – Eastern Small-footed Myotis – Little Brown Myotis – Northern Myotis – Tri-coloured bat – Red-headed Woodpecker – Eastern Hog-nosed Snake ■ Authorization under the ESA for the removal of confirmed SAR habitat may be required depending on the amount of habitat removed and if impacts can be avoided through implementation of additional mitigation measures (e.g., avoiding night time work, tree removal outside of bat and bird active season, designing lights so they point away from retained woodland, installation snake exclusion fence).	Detailed Design
■ The City's Water Operations will need to be compliant with the MECP's licensing, registration and permits for municipal drinking water systems. The City will comply with the Ministry's requirements as outlined on their website: ontario.ca/municipal-drinking-water-systems-licensing-registration-and-permits. ■ To make any additions, modifications, replacements or extensions to the drinking water system, changes must be either approved through a Schedule C amendment to the drinking water works permit or pre-authorized through a condition in your drinking water works permit. ■ The new elevated storage tank in Pressure District 2/3 will require the completion of Form 2 (Record minor modifications or replacements to the drinking water system) and Form 3 (Record of addition, modification or replacement of equipment discharging a contaminant of concern to the atmosphere), as well as the completion and submission of the Director Notification form to the Ministry when the elevated storage tank is completed.	After Construction

7.6 Additional Studies and Commitments

The following additional commitments and future work should be completed during the preliminary or detailed design stage for Site 3:

- Geotechnical investigation to assess the potential for constructing a large elevated storage tank and future in-ground or additional tank at the same site. The assessment will also identify construction specific requirements for the site to accommodate the water storage facilities.
- Updated Species at Risk habitat screening, as required, as protection status under the Endangered Species Act may change over time
- Plant Species at Risk search to confirm absence of tree Species at Risk within 50 metres of the proposed construction footprint.
- Breeding Bird Surveys targeting presence/absence of Red-headed Woodpecker.
- Visual Encounter/Cover Board Surveys targeting presence/absence of Eastern Hog-nosed Snake.
- If tree removal within the Cultural Coniferous Plantation (CUP3) cannot be avoided, then surveys targeting bat Species at Risk habitat and presence should be completed in accordance with the Survey Protocol for Species at Risk Bats within Treed Habitats (Ministry of Natural Resources and Forestry, 2017) and include leaf-off cavity searches and acoustic monitoring. As noted in **Table 7-1**, an authorization under the Endangered Species Act may be required if bat Species at Risk are confirmed present in the potential Species at Risk bat habitat (i.e., CUP3) and impacts to the habitat or species cannot be avoided.
- If required or requested by the City, a tree inventory to document required removals based on the construction footprint and for use in consideration of replacement plantings, if any.

7.7 Preliminary Project Schedule

If no issues are raised during the Municipal Class Environmental Assessment phase, the City intends to proceed to the preliminary design and detailed design phases starting in 2023, including securing permits and approvals.

Construction of the elevated water storage tank is anticipated to commence within 2 to 5 years between 2024 and 2027. The elevated water storage tank will be in-service after construction is complete between 2026 and 2028.

Construction of the proposed additional water storage on site would be completed post 2041, as needed.

The timing is subject to change in accordance with the timing of approval of this Municipal Class Environmental Assessment study, Council approval and funding.

8. Anticipated Environmental Effects and Mitigation Measures

Potential effects related to construction of the new water storage tank on Site 3 will be limited to the duration and location of construction. Based on the preferred solution, construction is expected to have minor to moderate and predictable environmental impacts. By incorporating proper best management practices and construction techniques, adverse construction related effects can be minimized. In order to address potential effects, the following approach was taken:

- **Avoidance:** The first priority is to prevent the occurrence of negative or adverse environmental effects associated with construction of the new water storage tank.
- **Mitigation:** Where adverse environmental effects cannot be avoided, it will be necessary to develop appropriate measures to eliminate, or reduce to some degree, the negative effects associated with construction of the proposed water storage tank.
- **Compensation:** In situations where appropriate mitigation measures are not available, or significant net adverse effects will remain following the application of mitigation measures, compensation measures may be required to counterbalance the negative effect through replacement in kind, or provision of a substitute or reimbursement.

The existing conditions (**Section 3**) were used as baseline conditions against which changes due to the project (effects) were assessed. Based on the project description for the preferred undertaking discussed in **Section 7**, avoidance measures can be applied in many cases, thereby reducing the extent of potential adverse environmental effects requiring the application of mitigation measures. The mitigation measures summarized below (**Table 8-1** and **Table 8-2**) are recommended to ensure that any short and long-term disturbances are managed efficiently through a variety of measures. These measures will be further confirmed and refined during the preliminary and detailed design phases.

Table 8-1: Potential Construction Related Effects and Mitigation Measures

Indicator	Potential Effects	Potential Mitigation, Compensation
Utilities	■ Potential need to relocate or protect existing utilities and infrastructure	During Preliminary/Detailed Design: ■ All subsurface utilities will be surveyed during the design phase to confirm utilities
Cultural Heritage Environment	■ Loss or disruption to archaeological resources	During Detailed Design: ■ Siting Area 3 was cleared of archaeological concern and no further work is recommended. Refer to **Appendix E** for the Stage 1 Archaeological Assessment Report ■ Where archaeological resources are impacted by Environmental Assessment project work, the Ministry of Citizenship and Multiculturalism will be notified by contacting archaeology@ontario.ca. All activities impacting archaeological resources must cease immediately, and a licensed archaeologist is required to carry out an archaeological assessment in accordance with the Ontario Heritage Act and the Standards and Guidelines for Consultant Archaeologists. ■ If human remains are encountered, all activities must cease immediately, and the local police and coroner must be contacted. In situations where human remains are associated with archaeological resources, Ministry of Citizenship and Multiculturalism should also be notified (at archaeology@ontario.ca) to ensure that the site is not subject to unlicensed alterations which would be a contravention of the Ontario Heritage Act.
Air Quality	■ Dust emissions during construction	During Construction: ■ Require contractor to implement provisions for dust control. It is recommended that non-chloride dust suppressants be applied during construction ■ Require contractor to halt work in event that dust emissions are found to be unacceptable
Noise	■ Disruption to adjacent residents, businesses	During Construction: ■ Use of low noise equipment during construction, where possible ■ Limit construction activity to within Noise Bylaw restrictions
Excess Materials Management	■ Discharge of a contaminant into the natural environment	During Construction: ■ In December 2019, Ministry of the Environment, Conservation and Parks released a new regulation under the Environmental Protection Act, titled “On-Site and Excess Soil Management” (O. Reg. 406/19). 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 coming into effect on January 1, 2021 ■ Activities involving the management of excess soil should be completed in accordance with the Ministry of the Environment, Conservation and Parks current guidance document titled “Management of Excess Soil – A Guide for Best Management Practices” (2014) available online (http://www.ontario.ca/document/management-excess-soil-guide-best-management-practices) ■ All waste generated during construction must be disposed of in accordance with ministry requirements.
Erosion and Sedimentation	■ Potential for erosion and sedimentation	During Detailed Design: ■ Develop an Erosion and Sediment Control Plan During Construction: ■ Implement and monitor erosion and sedimentation control strategy ■ Any areas disturbed by construction will be restored and stabilized as soon as practically possible
Control of Inadvertent Spills	■ Potential inadvertent spill of hazardous materials during construction	During Construction, require contractor to: ■ Store all oils, lubricants, fuels and chemicals in secure areas ■ Construction vehicle re-fueling stations should be centralized away (30 metres) from natural areas and watercourses. ■ Contractor to have a spill management plan in place prior to construction ■ Refer to **Table 8-2** for more details
Socio-Economic Environment	■ Potential disruption to surrounding properties during construction	Prior to Construction: ■ Undertake notification to area residents and businesses During Construction: ■ Minimize construction duration (working days) ■ Affected property owners will be notified in advance (e.g., signage, notices), as to construction schedule/duration ■ General project information and updates will be provided through the City’s website ■ Implement air and noise mitigation measures (see above)
Design Considerations	■ Concern regarding aesthetic appeal of the water storage tank	During Detailed Design: ■ Aesthetic appeal and designated use of space in design will be considered

Table 8-2: Natural Environment Mitigation Measures

Indicator	Potential Mitigation, Compensation
Design Considerations	■ Avoid tree removal within the Cultural Coniferous Plantation (CUP3) to the extent possible. At the time of this publication, the site plan level of detail has not been completed to determine the extent of tree removals potentially required
Sediment and Erosion Control Fencing	■ Mitigation measures are recommended to be used for erosion and sediment control to prohibit sediment from entering the identified vegetation communities and watercourses during construction. The primary principles associated with sedimentation and erosion protection measures are to: – minimize the duration of soil exposure – retain existing vegetation, where feasible – encourage re-vegetation – divert runoff away from exposed soils – keep runoff velocities low – trap sediment as close to the source as possible ■ Details of the type and placement of sediment and erosion control to be used will be outlined in an Erosion and Sediment Control Plan to be drafted prior to construction
Peripheral Vegetation Protection	■ During construction adjacent to the identified vegetation communities, heavy equipment could damage peripheral vegetation from contact, excavation and/or soil compaction. Dust coated vegetation can reduce photosynthesis, increase susceptibility to disease and lead to death. It is anticipated that perimeter plants would be most susceptible to such effects ■ The following recommendations are made to mitigate these potential impacts: – Prior to heavy machinery working adjacent to the identified vegetation communities, a fence barrier for tree protection should be installed outside the drip-line of tree identified for protection and is in the vicinity of exposure to damage by machinery
Dust Suppressant Treatment	■ Dust suppressants during dry periods should be applied to those areas which generate large amounts of dust ■ Restrict earth movement immediately adjacent to woodlands during periods of high dust generation
Controlled Construction Vehicle Access	■ Construction vehicle access should be limited to areas outside of the drip-line of vegetation to be retained to prevent soil compaction and/or the initiation of soil erosion events. The following recommendations are provided to address these potential sources of impacts: – Construction vehicle access should be limited to existing roadways and construction paths where possible – For areas immediately adjacent to the work limits and vegetation to be retained, periodic supervision of the construction near retained vegetation is recommended to monitor for any incidental intrusions or indirect damage
Construction Vehicle Re-fueling Stations	■ Re-fueling stations should be located within a centralized location on-site. ■ Re-fueling stations should be constructed in a manner to prevent soil and/or surface and groundwater contamination from any leaks or spills ■ An emergency response kit should be made available at each re-fueling station in case of a spill ■ All on-site crew members operating construction vehicles should be appropriately trained in handling a potential spill and have WHMIS Training ■ All chemical transfer/maintenance should be conducted within the refueling station areas
Damage to Rooting Zones during removals	■ During grading and construction in areas immediately adjacent to trees, roots may be damaged by machinery and soils may be compacted, thereby affecting the trees' ability to grow and absorb nutrients and water. In order to minimize root damage, it will be necessary to prune any exposed roots of adjacent trees during grading and excavation
Wildlife Habitat Protection and Mitigation Measures	■ Construction activities within Site 3 have the potential to disturb breeding birds and other resident wildlife. A certain degree of disturbance can be avoided by the proper scheduling of construction periods. The following mitigation measures are recommended to minimize impacts to wildlife. Upon the first encounter of any wildlife including Species at Risk (Endangered, Threatened or Special Concern) the following steps are to be taken: – Work in the immediate vicinity of the observation is to come to a stop – If the animal is uninjured, it should be allowed to leave the work zone under its own power and a record made of the observation – Should the animal be injured, unearthed or cannot flee the work zone under its own ability, an Ecologist/Biologist should be contacted immediately. – Ecologist/Biologist will notify the District Ministry of the Environment, Conservation and Parks Biologist within 48 hours of any observation of Endangered and Threatened species and/or immediately for any species going to a wildlife custodian – It is not necessary to notify the District Ministry of the Environment, Conservation and Parks Biologist with observations of Special Concern species (i.e., Snapping Turtle) or general wildlife sightings (i.e., deer, raccoon, etc.)
Breeding Birds and Vegetation Removals	■ Removal of vegetation within Site 3 can occur outside of the typical breeding bird period (April 1 to August 31) within southern Ontario. If removal of vegetation is to occur during the breeding bird window, the area will be searched by a qualified ecologist for the presence of nesting birds to avoid contravening the Migratory Birds Convention Act. Clearing shall only be undertaken if the ecologist is satisfied that there are no breeding/nesting pairs within the affected area

Indicator	Potential Mitigation, Compensation
Bat Species at Risk and Vegetation Removals	■ Tree removal within the Cultural Coniferous Plantation (CUP3) on Site 3 should be avoided to avoid impacts to potential bat Species at Risk that may be using the woodland as roosting habitat. If not possible, tree removal must occur outside of the bat active season (April 1 to September 30) to minimize effects on bat Species at Risk if confirmed present via Species at Risk targeted surveys (i.e., leaf-off cavity tree search and acoustic monitoring). Authorization under the Endangered Species Act for the removal of confirmed bat Species at Risk habitat may be required depending on the amount of habitat removed and if impacts can be avoided through implementation of additional mitigation measures (e.g., avoiding night time work, tree removal outside of bat active season, designing lights so they point away from retained woodland, installation of artificial roost boxes)
Red-headed Woodpecker and Vegetation Removals	■ Species-specific surveys to confirm presence/absence of Red-headed Woodpecker should be completed during detail design. If the Cultural Coniferous Plantation (CUP3) is confirmed to be used by Red-headed Woodpecker through surveys, authorization under the ESA will be require for any tree removal within the Cultural Coniferous Plantation (CUP3).
Eastern Hog-nosed Snake	■ Species-specific surveys to confirm presence/absence of Eastern Hog-nosed Snake should be completed during detail design. Mitigation measures to avoid impact on this species may include installation of a snake exclusion fence buried to a depth of 10-20 cm below ground level and 60 cm tall above ground in accordance with the Ministry of the Environment, Conservation and Park's Reptile and Amphibian Exclusion Fencing (MECP, 2021) to prevent Eastern Hog-nosed Snake from entering the construction work area. The snake exclusion fence should be installed around the construction work area prior to April 1 of any year prior to work commencing. Additional mitigation measures or habitat compensation measures may be required and should be confirmed through consultation with the Ministry of the Environment, Conservation and Parks.
Construction Mitigation – Noise Disturbance to Resident Wildlife	■ Limit construction activity to a period after 7 am and before 7 pm daily

8.1 Proposed Construction Monitoring

Contract tender documents will address mitigation in an explicit manner to ensure that compliance is maintained. The provision of an experienced field representative to review construction will ensure that the new water storage tank follows contract specifications and does not unnecessarily impact the environment and the surrounding community.

8.2 Post-Construction Monitoring

Following construction, the operation of the proposed water storage tank is not expected to result in any negative impacts. Post construction monitoring will be required following construction to ensure that any disturbances have been properly restored (e.g., grading, seeding and planting). Post construction monitoring details will be developed during detailed design.

9. Consultation Summary

9.1 Notifications

9.1.1 Notice of Commencement

The Notice of Commencement was first issued on February 3, 2022 introducing the study and included contact information for the City and Consultant project managers. The following describes the methods by which the notice was distributed:

- Advertised in three local newspapers: Civic News (Brantford Expositor), Two Row Times and Turtle Island News
- Posted on the City's project webpage and social media platforms
- Issued to the study's contact list
- Issued to property owners within 500 metres of the three sites

Refer to **Appendix G** for a copy of the Notice of Commencement.

9.1.2 Notice of Public Information Centre

The Notice of Public Information Centre was first issued on May 5, 2022 inviting anyone with an interest in the study to attend an in-person Public Information Centre and included contact information for the City and Consultant project managers. The following describes the methods by which the notice was distributed:

- Advertised in three local newspapers: Civic News (Brantford Expositor), Two Row Times and Turtle Island News
- Posted on the City's project webpage and social media platforms
- Issued to the study's contact list
- Issued to property owners within 500 metres of the three sites

Refer to **Appendix G** for a copy of the Notice of Public Information Centre.

9.1.3 Notice of Completion

The Notice of Completion was first issued on March 2, 2023. The notice identified the preferred solution and specified where to access the documentation during the 30-day comment period starting on March 8, 2023 and ending on April 7, 2023. The procedure for submitting comments and Section 16 Order requests was also included in the notice, as described in **Section 2.4** of this report.

The following describes the methods by which the notice was distributed:

- Advertised in three local newspapers: Civic News (Brantford Expositor), Two Row Times and Turtle Island News
- Posted on the City's project webpage and social media platforms.
- Issued to the study's contact list
- Issued to property owners within 500 metres of the three sites

Refer to **Appendix G** for a copy of the Notice of Completion.

9.1.4 Public Information Centre

A Public Information Centre was held on Wednesday May 18, 2022 from 6:00 pm to 8:00 pm at the Walter Gretzky Municipal Golf Course (320 Balmoral Drive, Brantford) in the Clubhouse. The format of the event was an in person drop-in centre format with display boards sharing project information and key members of the Study team present to answer any questions from attendees at the event. In total, 12 participants, excluding the study team signed into the event.

The purpose of the Public Information Centre was to:

- Introduce the Pressure District 2/3 Municipal Class Environmental Assessment study
- Provide an overview of the Municipal Class Environmental Assessment planning process
- Present the study's problem and opportunities and evaluation of alternative siting options for a new water storage tank, including the preliminary preferred location
- Explain how potential impacts to the community and environment will be addressed
- Inform the community of the next steps for the Project
- Gather feedback on the Project, including the preliminary preferred solution

A copy of the material presented was also made available following the event at the City of Brantford's website – brantford.ca/WaterStorageTankEA. One comment form was received complementing the Study team for answering their questions related to the three potential sites for a new water storage tank. Other agency and stakeholder correspondence relating to the Notice of Public Information Centre is summarized in **Section 9.2**. Refer to **Appendix G** for a copy of the Public Information Centre materials and public correspondence pertaining to this study.

9.2 Agency and Stakeholder Consultation

Key agencies and stakeholders were notified at key milestones over the course of the study. The study's agency and stakeholder contact list is included in **Appendix H.**

Meetings were requested from the owners of the potential sites at beginning of the Municipal Class Environmental Assessment process to introduce the project and gain feedback on the site, including willingness to have a new water storage tank on their property. Meetings were accepted and held with the representatives for Sites 2 and 3. The property owner for Site 1 did not respond to the meeting request.

The property owner of Site 3 has no objection in principle to the preferred site, subject to further discussion and negotiations with the City. Refer to **Appendix H** for a copy of the meeting minutes and correspondence with the property owners of the potential siting options.

Table 9-1 summarizes the incoming agency and stakeholder correspondence received by the Study Team. The detailed correspondence between the Study Team and all agencies and stakeholders is included in **Appendix H**.

Table 9-1: Key Agency and Stakeholder Correspondence

Agency / Stakeholder	Date	Summary of Correspondence	Summary of Study Team Response
Hydro One	February 7, 2022	■ Requested map of the study area	■ Map of potential sites circulated to Hydro One on March 14, 2022
Hydro One	March 17, 2022 and May 27, 2022	■ Indicated that based on preliminary assessment, there are no existing Hydro One Transmission assets in the subject area	■ Comments noted
Ministry of the Environment, Conservation and Parks	February 8, 2022	■ Issued the updated (February 2021) attached "Areas of Interest" document provides guidance regarding the ministry's interests with respect to the Class Environmental Assessment process. ■ A draft copy of the report should be sent directly to the ministry prior to the filing of the final report ■ Send a copy of the final notice to the ministry's West Central Region Environmental Assessment notification email account	■ Draft report will be circulated to the Ministry of the Environment, Conservation and Parks ■ The Notice of Completion will be issued to the noted email account
Ministry of the Environment, Conservation and Parks	December 20, 2022	■ Requested to include the date for the Notice of Completion and any follow-up correspondence in the final Project File Report ■ Provided comments related to Indigenous consultation and Species at Risk	■ The Notice of Completion timing and correspondence will be documented in final Project File Report ■ Confirmed approach to consultation with Indigenous Communities. The consultation log detailing Indigenous correspondence was circulated to the Ministry and the final copy is included in **Appendix I** ■ The City acknowledges the responsibilities noted regarding Species at Risk
Ministry of the Environment, Conservation and Parks	January 13, 2023	■ Provided additional comments regarding Species at Risk	■ The additional Species at Risk within the vicinity of the site and are now listed in the Project File Report (**Table 3-1**) and in the **Natural Environment Report (Appendix D)**.
Ministry of Citizenship and Multiculturalism	March 14, 2022	■ Letter summarizing the Ministry of Citizenship and Multiculturalism mandate of conserving Ontario's cultural heritage, which includes: – archaeological resources, including land and marine – built heritage resources, including bridges and monuments – cultural heritage landscapes ■ The study requires the determination whether an archaeological assessment is needed and that a Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment be undertaken	■ A Stage 1 archaeological assessment report has been completed ■ AECOM followed up with the Ministry to confirm whether a full Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment is required
Ministry of Citizenship and Multiculturalism	June 23, 2022	■ The ministry confirmed that the desktop Cultural Heritage Screening Report for the three potential water storage siting options is sufficient ■ Requested to include the report in the appendices to the Project File and incorporate its findings into the evaluation of alternatives in the Project File body ■ If project realities shift such that Site 1 becomes the preferred alternative, the CHER recommended should be completed and included in the Project File	■ The desktop Cultural Heritage Screening Report has been appended to the Project File
Ministry of Citizenship and Multiculturalism	December 2, 2022	■ Confirmed the Stage 1 Archaeological Assessment has not yet been submitted for technical review through the regulatory channels ■ Provided comments on the checklist completed for the Desktop Cultural Heritage Screening Report and the terminology in the Project File Report.	■ Response letter dated December 16 2022 issued to the Ministry of Citizenship and Multiculturalism confirming the Stage 1 Archaeological Assessment will be submitted for technical review, a separate copy of the checklist for each of three potential site locations has been appended to the Desktop Cultural Heritage Screening Report (**Appendix F**) and that the language in the Project File Report has been updated to identify the correct terminology ■ The Ministry of Citizenship and Multiculturalism will be issued a copy of the Notice of Completion with a link to download the Final Project File
Grand River Conservation Authority	March 14, 2022	■ Noted that Site 2 is partially within the regulated area due to the wetland located to the west of the site identified. The site being adjacent to a wetland would not prevent the water storage tank being located there, but may request an evaluation of potential impacts ■ Grand River Conservation Authority has no features of interest on or adjacent to the other potential short listed sites for a new water storage tank	■ Comments noted
Grand River Conservation Authority	May 19, 2022	■ Based on a review of the Public Information Centre materials, Grand River Conservation Authority has no objection to the preferred Site 3 option	■ Comments noted and included in the consultation record
Grand River Conservation Authority	November 17, 2022	■ Confirmed no further comments on the draft Project File	■ Comments noted

9.3 Indigenous Community Consultation

The following Indigenous Communities were consulted as part of this study:

- Mississaugas of the Credit First Nation
- Six Nations of the Grand River (Elected Council)

Table 9-2 summarizes the correspondence received. The noted Indigenous Communities were circulated on all notifications and provided the opportunity to provide feedback on the draft Project File prior to the 30-day comment period.

The City will continue to engage with Mississaugas of the Credit First Nation and Six Nations of the Grand River (Elected Council) if there any substantial changes to the project/process or if applying for subsequent permits from the Ministry of the Environment, Conservation and Parks that may be of interest or concern to the identified communities.

Refer to **Appendix I** for the complete Indigenous consultation record.

Table 9-2: Indigenous Community Correspondence

Indigenous Community/ Organization	Date	Summary of Correspondence and Response	Summary of Study Team Response
Mississaugas of the Credit First Nation	October 21, 2021	■ Requested a summary of the history of this project and the current state of its associated environmental and archaeological fieldwork ■ Requested Field Liaison Representatives to participate in the environmental and archaeological field work	■ Provided a letter with the notice of commencement introducing the study, including a project summary and next steps ■ The City acknowledges the request for Field Liaison Representatives to participate in the environmental and archaeological field work
Mississaugas of the Credit First Nation	May 11, 2022	■ Requested to resend the recent project correspondence to review alongside the Notice of Public Information Centre letter	■ Provided previous correspondence
Mississaugas of the Credit First Nation	May 12, 2022	■ Indicated no further comments or concerns at this time ■ Requested to update Mississaugas of the Credit First Nation when the Environmental Assessment Study becomes available ■ Contact Adam LaForme for the archaeology process	■ The City will share the draft Project File Report before it is posted for public review ■ The draft Project File was circulated via email on November 8, 2022
Mississaugas of the Credit First Nation	December 20, 2022	■ Mississaugas of the Credit First Nation, Department of Consultation and Accommodation must be in receipt of all Environmental Assessment reports and must be engaged for all Archaeological Assessments. This engagement includes in-field participation by having Mississaugas of the Credit First Nation community members present when any archaeological assessments are being conducted and a review of all reports prior to submission to the ministry for clearance. This engagement is at cost of the proponent	■ Provided an update on the Project regarding the Stage 1-2 archaeological assessment completed by the property owner at the preferred siting location for the new water storage tank (i.e., Site 3). The site has been cleared of archaeological concern and no further assessments are recommended, subject to the report being entered into the Ontario Public Register of Archaeological Reports ■ The City will continue to keep Mississaugas of the Credit First Nation, Department of Consultation and Accommodation informed of any important project updates, including providing the Notice of Completion and sharing a copy of the final Project File
Six Nations of the Grand River	May 11, 2022	■ Requested the Cultural Heritage Report and location of the preferred site for the new water storage tank	■ The City will issue the Cultural Heritage Screening report for their review ■ The Public Information Centre will include the preferred site. A copy of the materials was shared with Six Nations of the Grand River following the event ■ The draft Project File was circulated via email on November 8, 2022

10. Conclusions

This Project File covers the process required to ensure that the proposed site for a new water storage tank complies with the *Environmental Assessment Act*. The Municipal Class Environmental Assessment planning process has not identified any significant environmental concerns that cannot be addressed by incorporating best management practices and established mitigation measures during construction.

The proposed works described in **Section 7** involves a new elevated water storage tank with accommodation for future additional storage (in-ground or elevated, to be determined), pending growth demands. The King George Elevated Tank will be decommissioned in the future for optimization of Pressure District 2/3 operations. Upgrade requirements at Tollgate and Wayne Gretzky Pumping Stations will be confirmed through preliminary and detailed design.

The preferred solution (Site 3) resolves the problem or opportunity statement (**Section 5**) identified in this report. A preliminary evaluation of potential effects indicates minor to moderate and predictable impacts that can be addressed by recommended mitigation measures as presented in **Section 8**.

Subject to receiving Municipal Class Environmental Assessment clearance and acquiring the subject Site 3 property, the City will complete the preliminary and detailed design, which includes permitting-approvals and proceed to construction. The elevated water storage tank is anticipated to be in-service after construction is complete between 2026 and 2028.