EXPANSION OF THE KINCARDINE WATER SUPPLY SYSTEM AND TREATMENT PLANT SCHEDULE C MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT

Environmental Study Report

October 27, 2023

Prepared for:
Municipality of Kincardine

Prepared by:
Stantec Consulting Ltd.

Project Number:
165630238

DRAFT FOR MUNICIPALITY

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Executive Summary

The Municipality of Kincardine (Municipality) has retained Stantec Consulting Ltd. to complete a Class Environmental Assessment (EA) to identify options for expansion of the Kincardine Water System and Treatment Plant (WTP).

The Class EA Study is being planned in accordance with the planning and design process for Schedule "C" projects as outlined in the *Municipal Engineers Association Municipal Class Environmental Assessment Document* (2000, as amended 2007, 2011, 2015), which is an approved process under Ontario's *Environmental Assessment Act*. This project was initiated prior to the release of the 2023 Municipal Class EA document in March 2023, which provided updates to the classification of some projects, although the general process is unchanged. The 2015 MEA document continued to govern the EA process for this study.

This Environmental Study Report (ESR) is completed to define the problem and opportunity, consider existing conditions, and documents the decision-making process for developing the preferred design based on consultation with agencies, Indigenous communities, and the public.

The Kincardine WTP, located at 155 Durham Street, provides the municipal water supply to Kincardine, and portions of the lakeshore, Inverhuron, and Inverhuron Provincial Park. A problem and opportunity statement was developed as part of Phase 1 of the EA process. The statement identified that expansion alternatives will be developed for anticipated community growth and to consider possible servicing requirements to extend water supply to the Bruce Power site.

Phase 2 of the EA consisted of an inventory of the natural, social, and economic environments, as well as the identification and evaluation of Alternative Solutions. The review was conducted for the study area with a focus on areas associated with the Kincardine WTP, and areas within the Kincardine distribution system that would require upgrades to provide supply to the Bruce Power site. Hydraulic modeling undertaken as part of the study identified the need for a new booster pump station (BPS) to boost system pressures to meet the additional Bruce Power site demand. For this reason, the study area also included the existing watermain along Bruce Road 23 and potential BPS sites to provide water supply to the Bruce Power site.

A review of potential Kincardine WTP process upgrades at the plant indicated that process improvements are available that can achieve the projected target rated capacity for Kincardine WTP (15,500 m^3 per day) within the existing site footprint and that an additional site would not be needed. The Alternative "Expansion of the Existing Kincardine WTP on the Existing Site" was carried forward for further assessment in the Alternative Design phase.

The BPS evaluation consisted of five municipal parcels along the existing watermain which were screened as potential BPS sites. Two sites were shortlisted for evaluation at Riggin Park and a Stormwater Management (SWM) pond site near Stoney Island Crescent. Both sites met the hydraulic technical requirements, and each had natural areas and a watercourse along the site boundary. Riggin Park had more constructability challenges as an existing municipal trail or road connection would involve a greater potential for constructability challenges compared to Stoney Island Crescent. As a result, “BPS at Stoney Island Crescent” was carried forward for further assessment.

This project included opportunities for public engagement, including a Notice of Study Commencement in November 2022, and two Public Information Centres (PIC). PIC1 was held virtually with presentation material posted between March 30, 2023 to April 28, 2023 where the Alternative Solutions assessment was presented. PIC 2 was held in-person on July 24, 2023 and presented the evaluation of Alternative Design solutions.

Following PIC1, public comments were received regarding flooding concerns associated with the SWM site at Stoney Island Crescent, as well as the loss of greenspace used by residents. Based on public feedback, the BPS was shifted to the rear of the site away from the largest portion of greenspace, and to avoid the existing pond and the mapped natural ravine area.

The evaluation of Alternative Designs at the Kincardine WTP considered whether Ultraviolet (UV) or a non-UV treatment approach would be preferred. Through the evaluation, UV primary disinfection was carried forward as it delivers the necessary 15,500 m^3/d capacity in an efficient manner, and reduces WTP reservoir storage volume required for disinfection. This alternative reduces the natural, social and cultural impacts as all treatment and storage can remain at the existing WTP.

“Alternative 1: In-Line BPS with No On-site Storage” was selected as the preferred BPS as it met the technical and hydraulic requirements while minimizing the site footprint and natural area to be impacted. The SWM pond site was included for evaluation purposes and to determine constructability. Should the Municipality identify an alternative site near the Crescent, it may also meet the hydraulic requirements.

An approximate 1.1 km watermain extension was carried forward as the preferred watermain extension option. This option connects the existing watermain to the Bruce Power site along the shortest route from the current termination of the watermain near Alma Street and Albert Road. The route is anticipated to occur within the ROW. Any longer route using an alternate road was not considered viable since it would result in significantly higher construction costs, and it would increase the potential to impact the natural environment, social environment, and cultural environment without achieving technical benefit. The location of the watermain within the ROW would be determined in detailed design.

The municipally-owned SWM pond site with the BPS to the rear of the site was originally selected as the preferred site, however concerns were raised by local residents as part of the consultation process. Alternative sites were presented at PIC#2 as also being capable of meeting the hydraulic requirements and additional analysis extended the potential areas further. These alternative sites were screened and could be considered by the municipality as viable options over the use of the SWM block. Further environmental investigations will be required once the final site has been confirmed.

The project identified a two-phase approach to growth as demand increases that allows for a second BPS to be developed further upgradient near Riggin Park. Based on anticipated demand analysis undertaken as part of the concurrent Water and Wastewater Servicing Master Plan Update (BM Ross, 2023), it is unlikely to be required within the 20-year planning horizon (2043).

In summary, the preferred Alternative Design includes:

- Expansion of the Kincardine WTP within the existing site,
- A BPS to be located along the existing watermain, and
- Extension of the existing watermain approximately 1.1 km north to the Bruce Power site boundary.

Following the 30-day public review period of the ESR and 30-day Ministry of the Environment, Conservation and Parks (MECP) review period, the municipality is permitted to proceed to Detailed Design and implementation.

1 Introduction

The Municipality of Kincardine (Municipality) has retained Stantec Consulting Ltd. to complete a Schedule C Municipal Class Environmental Assessment (EA) study to identify options for expansion of the Kincardine Water System and Treatment Plant (WTP).

The Kincardine WTP, located at 155 Durham Street, provides municipal water supply to Kincardine, portions of the lakeshore, Inverhuron, and Inverhuron Provincial Park. The purpose of this EA study is to develop and assess expansion alternatives to service the anticipated community growth and to consider possible servicing requirements to extend supply to the Bruce Power site.

1.1 Project Context and Background

This project was initiated following a Comprehensive Performance Evaluation (CPE) undertaken by Stantec in 2021 to confirm the capacity of the WTP based on actual system component hydraulic capacity and potential limiting factors so that the system can continue to achieve compliance and disinfection targets.

Results of the CPE indicated that potential exists to consider a possible extension of the existing northern watermain to the Bruce Power site. Preliminary infrastructure requirements identified, such as a BPS, require completion of an EA study prior to implementation.

This Class EA Study is being planned in accordance with the planning and design process for Schedule “C” projects as outlined in the *Municipal Engineers Association Municipal Class Environmental Assessment Document* (2000, as amended 2007, 2011, 2015), which is an approved process under Ontario’s *Environmental Assessment Act*.

The study is being completed concurrently with the municipality’s Water and Wastewater Servicing Master Plan Update. Information from the Master Plan Update, such as water demand forecasting information, has informed this Class EA Study.

This ESR documents the Municipal Class EA process followed. The EA defines the problem, identifies and evaluates alternative solutions, alternative designs, and develops a preferred design concept based on consultation with agencies, Indigenous communities, and the public.

1.2 Study Area

The study area for the project includes the Kincardine WTP at 155 Durham Street, as well as a study area that extends north generally along Bruce Road 23 to the Bruce

Power site, within the Municipality of Kincardine, Bruce County. The study area map is shown on **Figure 1.**

Figure 1: Study Area[1]

[1] Note that the study limits do not imply servicing or development potential.

2 Environmental Assessment Process

2.1 Municipal Class Planning Process

All municipalities in Ontario are subject to the provisions of the *Environmental Assessment Act* (EA Act), which mandates the completion of an EA before constructing municipal infrastructure projects. The environments included under the EA Act encompass social, cultural, natural, and economic aspects of Ontario. The Ministry of the Environment, Conservation and Parks (MECP) is responsible for administration of the EA Act.

The Municipal Engineers Association (MEA) *Municipal Class Environmental Assessment* document (October 2000, as amended in 2007, 2011, & 2015), provides guidelines approved under the EA Act which protect the environment during the completion of municipal road, sewage and water infrastructure projects. The undertakings are considered pre-approved provided the mandatory environmental planning process as set out in the Class EA document is completed. The MEA Class EA document provides municipalities with a five-phase planning process approved under the EA Act to plan and undertake all municipal infrastructure projects in a manner that protects the environment.

This project was initiated prior to the release of the 2023 Municipal Class EA document in March 2023, which provided updates to the classification of some projects, although the general process is unchanged. The 2015 MEA document will continue to govern the EA process.

Key components of the Class EA planning process include:

- Consultation with potentially affected parties early and throughout the process;
- Consideration of a reasonable range of alternative solutions;
- Systematic evaluation of alternatives;
- Clear and transparent documentation; and
- Traceable decision-making.

The MEA Class EA document provides a framework by which projects are classified as Schedule A, A+, B, or C based on a variety of factors including the general complexity of the project, level of investigation required, and the potential impacts on the natural, social, cultural, and economic environments that may occur. Each schedule classification requires a different level of documentation and review to be compliant with the EA Act and satisfy the requirements of the Class EA. The proponent is responsible

for identifying the appropriate schedule for any given project and reviewing the applicability of the schedule at multiple stages throughout the project.

Schedule A projects are limited in scale with minimal anticipated environmental impacts. They are pre-approved and may be implemented without undertaking public consultation or following the planning process as outlined in the Class EA. Examples of Schedule A projects include on-going maintenance activities, normal operation of sewage treatment plants, and increasing pumping station capacity by adding or replacing equipment where new equipment is located within an existing building or structure.

Schedule A+ projects are similarly pre-approved but require that proponents notify potentially affected parties prior to implementation. An example of a Schedule A+ project includes retiring a water infrastructure facility or retrofitting a facility for improvements.

Schedule B projects have the potential for some adverse environmental and social impacts. Proponents are thus required to undertake a screening process involving mandatory contact with potentially affected members of the public, Indigenous communities, and relevant review agencies to ensure that they are aware of the project and that their concerns are addressed. Schedule B projects require the completion of Phases 1 and 2 of the Class EA planning process, which is documented in a Project File and submitted for a mandatory 30-day comment period.

Schedule C projects have the potential for significant environmental impacts and must follow the full planning process specified in the Class EA document, including Phases 1 through 4. The project is documented in an Environmental Study Report (ESR), which is then filed for public, agency, and Indigenous community comment. Projects generally include the construction of new facilities, and major expansions to existing facilities.

2.2 Planning Process

Figure 2 illustrates the Class EA planning process and identifies the steps considered mandatory for compliance with the requirements of the EA Act. An overview of the five-phase planning process is provided.

Although constructing a BPS or an extension of an existing watermain would fall under a Schedule ‘B’ project, a water project to “construct new water treatment plant or expand existing water treatment plant beyond existing rated capacity” is classified as a Schedule ‘C’ activity. Given that capacity expansion of the Kincardine WTP may be required, this project will follow the Schedule ‘C’ process. Schedule C projects complete Phases 1-4 of the MCEA study process.

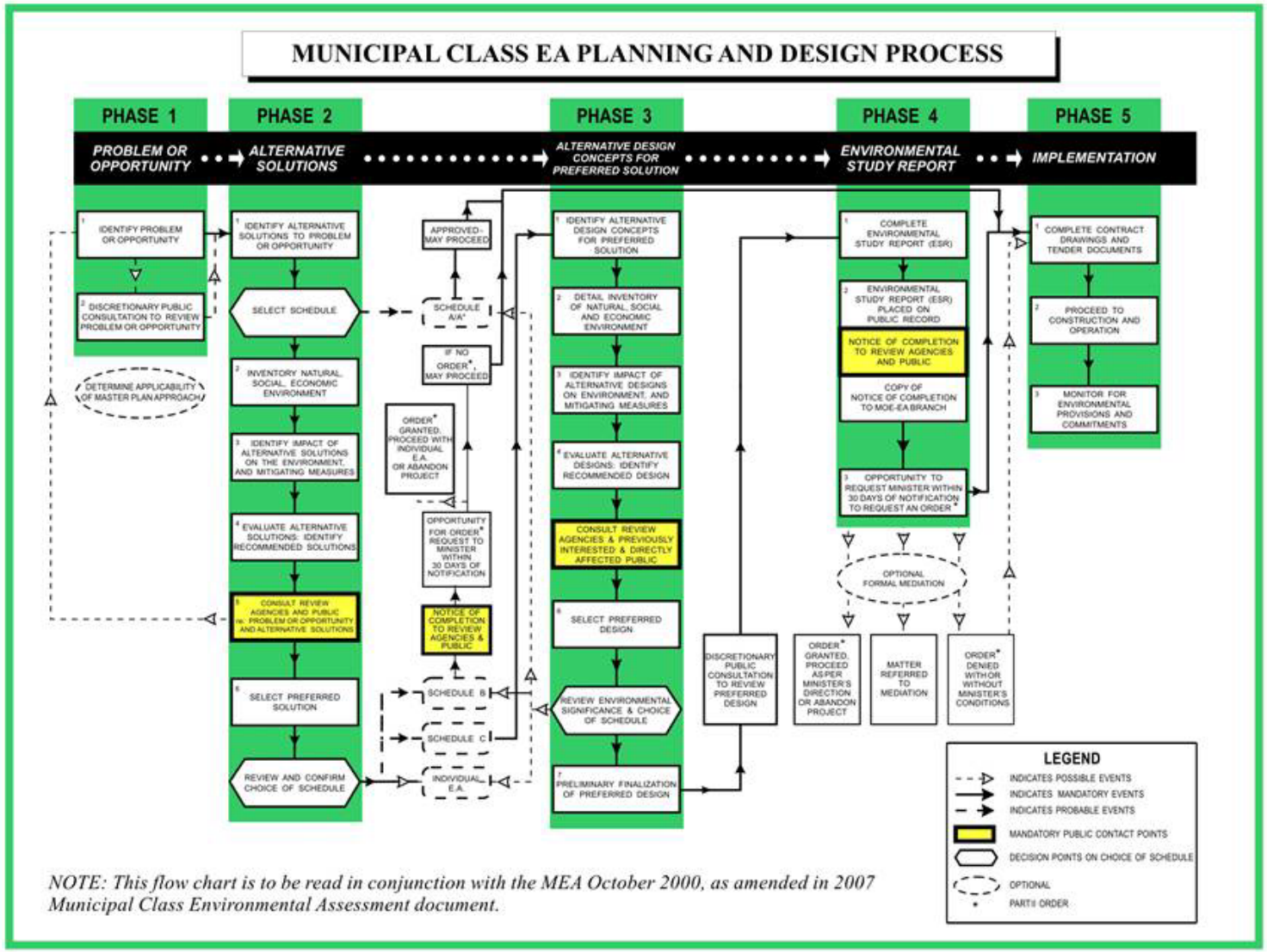


Figure 2: MEA Municipal Class EA Planning and Design Process

2.3 Section 16 Order Process

Interested persons may provide written comments to the Municipality of Kincardine for a response using the following contact information:

Adam Weishar, C.E.T.
Director of Infrastructure and Development
Municipality of Kincardine
1475 Concession 5, RR 5
Kincardine ON, N2Z 2X6
Email: aweishar@kincardine.ca
Phone: 519-396-3468 ext. 119

In addition, following the filing of the Notice of Completion a request may be made to the Minister of the Environment, Conservation and Parks under Section 16 of the *EA Act* requiring a higher level of study (i.e., requiring an individual/comprehensive EA 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 for the ministry.

Requests should specify what kind of order is being requested (request for additional conditions or a request for an individual/comprehensive environmental assessment), how an order may prevent, mitigate or remedy those potential adverse impacts, 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 by mail or by email to:

Minister of the Environment, Conservation and Parks
Ministry of Environment, Conservation and Parks
777 Bay Street, 5th Floor
Toronto ON M7A 2J3
minister.mecp@ontario.ca

and

Director, Environmental Assessment Branch
Ministry of Environment, Conservation and Parks
135 St. Clair Ave. W, 1st Floor
Toronto ON, M4V 1P5
EABDirector@ontario.ca

Requests should also be sent to the Municipality of Kincardine.

2.4 Canadian Environmental Assessment Act

Under the *Canadian Environmental Assessment Act, 2012* (CEAA, 2012), a federal environmental assessment study may be required to comply with the physical activities that constitute a “designated project”, under the project list identified in the Regulations Amending the Regulations Designating Physical Activities, 2013. This project list ensures that federal environmental assessments are focused on the major projects with the greatest potential for significant adverse environmental impacts to matters of federal jurisdiction.

The Kincardine Water Supply System Class EA study does not constitute a “designated project” and therefore does not require an EA under the CEAA, 2012. However, the Minister of the Environment, Conservation and Parks may order an assessment for any project not included in the project list, where there may be adverse environmental effects related to federal jurisdiction.

3 Consultation and Engagement

Consultation is an integral part of the Class EA process. Active engagement with all potentially affected parties including government agencies, community members, special interest groups, and Indigenous communities ensures a transparent and responsible planning process. In addition, the urban design and placemaking elements of this project will benefit immensely from meaningful and engaging consultation with members of the community.

3.1 Project Contact List

A project contact list was created which includes government agencies and officials, local municipal staff, committees, emergency service contacts, potentially interested Indigenous communities, members of the public, utility services, special interest groups, as well as local property owners within the study area. The list was regularly updated to include those who expressed interest in the study. A copy of the contact list is provided in **Appendix A**.

3.2 Study Notices and Public Consultation Centres

Notices were sent via mail or email (where requested) to property owners within the study area, the project contact list, and Indigenous communities. The notice was published in the *Kincardine News* as well as on the *News and Notices*, platform on the Municipality of Kincardine website located https://www.kincardine.ca/Water-and-Sewer/.

The study notifications are provided in **Appendix A**, including:

- Notice of Study Commencement
    - Published in the *Kincardine News* on November 24, 2022.
    - Notified agencies and groups by email on November 24, 2022. MECP was provided with a copy of the notice as well as the Project Information Form (PIF) on November 24, 2022.
    - Indigenous communities were sent a letter on Municipality of Kincardine letterhead on November 24, 2022. All communities on the MECP list of Indigenous communities were sent the notice.
- Notice of Public Information Centre 1

  - Published in the *Kincardine News* on March 9 and March 16, 2023. Published on the Municipal website at the same time as the advertisement. https://www.kincardine.ca/Water-and-Sewer/).
  - Notified agencies and groups by email on March 23, 2023, as well as individuals requested to be added to the mailing list.
  - Indigenous communities were sent an email with the PIC details on March 16, 2023. All communities on the MECP list of Indigenous communities were sent the notice.
  - A virtual PIC presentation with a voice over was posted on the website on March 30, 2023 to April 28, 2023.

- Notice of Public Information Centre 2
  - Published in the *Kincardine News* on July 12 and July 19, 2023. The advertisement was also placed on the Municipal website https://www.kincardine.ca/Water-and-Sewer/).
  - Notified agencies and groups by email on July 12, 2023, as well as individuals requested to be added to the mailing list.
  - Indigenous communities were sent an email with the PIC details on July 12, 2023. All communities on the MECP list of Indigenous communities were sent the notice.
  - Follow-up telephone calls were placed to the Indigenous communities July 13, 2023.
  - Properties within 120 m of the proposed work areas near Stoney Island Crescent, the Kincardine WTP, and the watermain extension on Concession Road 2 were mailed the notice on July 14, 2023.

- Notice of Study Completion
  - At the conclusion of the project, a Notice of Study Completion will be distributed to the project mailing list, including agencies, Indigenous communities, and members of the public that requested to be on the mailing list.
  - The notice will indicate the start of the 30-day public comment period, and how to provide comments.

3.3 Agency Consultation

Several ministries, agencies and authorities were contacted during project initiation and throughout the study to notify them of the project and to request information related to the study area and feedback pertaining to the study. Agency comments received are included in **Appendix C**.

<u>Provincial Agencies</u>

- Ministry of Citizenship and Multiculturalism
- Ministry of Natural Resources and Forestry – Midhurst District
- Infrastructure Ontario
- Ministry of the Environment, Conservation and Parks

<u>Local Interest Groups</u>

- Saugeen Valley Conservation Authority (SVCA)
- Grey Sauble Conservation

<u>Municipal/Agency Staff</u>

- Municipality of Kincardine
- Bruce County – Public works and Corporate services/ Clerk and Planning
- Bruce County – Public works, Planning and Transportation Services

<u>Emergency Services</u>

- Ontario Provincial Police- Bruce County
- Kincardine Fire Services
- Bruce County Paramedic Services

<u>Utilities</u>

- Hydro One Networks Inc.
- Kincardine Utilities
- Westario Power Inc.
- Bruce Telecom
- Hurontel
- Kincardine Cable TV
- EPCOR Natural Gas

<u>Local Organizations and Groups</u>

- Student Transportation Consortium of Grey Bruce
- Kincardine Trails Association
- Kincardine & District Chamber of Commerce
- Bruce Power
- Kincardine Airport/Phoenix Airport Management Group
- South Bruce Grey Health Centre
- Inverhuron Provincial Park
- Ontario Parks
- Kincardine Tourism
- Bruce County Tourism
- BM Ross Consulting
- Bruce Energy Centre Inc.
- Bluewater District School Board and Bruce-Grey Catholic District School Board

<u>Public</u>

- Individuals added to the mailing list based on comments received

Comments were received from agencies as summarized in **Table 1**.

Table 1: Agency Comments Received

Contact Information	Comment	Action Taken
Agencies		
County of Bruce **Adam Stanley** **Engineering Manager** **Transportation & Environmental Services** **Office: 519-881-2400** **www.brucecounty.on.ca**	Email November 24, 2022: • The County is in receipt of the Notice of Study Commencement for the Schedule 'C' EA – Expansion of the Kincardine Water System and Treatment Plant. As noted by the location plan on the Notice, Bruce Road 23 (Queen Street) is in the affected study area. • As such, the County's Transportation and Environmental Services Department (TES) would appreciate the continuance of inclusion for the distribution of information and documents related to the project. TES Staff would have interest in attending the PICs and obtaining copies of any documentation related to the preferred alternatives that might affect the County Road Allowance(s). • TES Staff would like to note that we are a willing participant to identify opportunities to work with our lower tier counterparts to upgrade infrastructure where it may be mutually beneficial.	Email November 28, 2022: • Thank you for your email and we appreciate your interest in this project. The project is in its initial stages, and alternative solutions will be developed as the project proceeds. The project team will add the individuals referenced on this email to the mailing list for further consultation opportunities and to receive updates and notices.
Saugeen Valley Conservation Authority **Michael Oberle, Environmental Planning Coordinator** **m.oberle@svca.on.ca** **Other:** **Erik Downing, Manager Environmental Planning and Regulations** **e.downing@svca.on.ca**	Email December 12, 2022: • This email is further to your email of below regarding the above referenced project. • Please be advised that I will be the field staff person at the SVCA who will review this project going forward. • There are large areas within the study area that are subject to natural hazard features and/or significant natural heritage features. • Similarly, within and adjacent to natural hazard areas, SVCA staff note that areas within the study area where SVCA input will be required such as where the works may require SVCA permit(s) pursuant to our Ontario Regulation 169/06, as amended (SVCA development regulation). • Again, SVCA staff thank you for the opportunity to provide our comment and will appreciate the opportunities to review the details of the matter as it continues. Accordingly, we request that you continue to notify the SVCA as subsequent steps arrive. If you have any questions, do not hesitate to contact our office.	Email December 20, 2022: • Thank you for your email regarding the Expansion of the Kincardine Water System and Treatment Plant Municipal Class Environmental Assessment. The project includes a natural environment background review which will consider natural features, potentially sensitive habitat, and potential to encounter wildlife habitat. The project will also consider sourcewater protection areas that may be encountered. • Your contact information has been added to the project mailing list and SVCA will be informed and notified at key milestones as the project continues. Email May 26, 2023: • Requested information regarding the Stoney Island Crescent site, with respect to PIC 2. No response provided. The Municipality will continue to engage with SVCA regarding the project in detailed design regarding permitting requirements.
Hydro One **Secondary Land Use** **Secondarylanduse@hydroone.com**	Letter December 12, 2022: • Hydro One transmission infrastructure is present in the study area. • Requested confirmation about whether Hydro One land will be avoided. • Where the land may not be avoided, Hydro One screening and/or an EA may be required to consider its infrastructure and mitigation.	• Infrastructure location is noted by the project team. • Hydro One infrastructure near Bruce Power site considered a key constraint

Contact Information	Comment	Action Taken
	Email April 19, 2023: • Thank you for sending us notification regarding (Expansion of the Kincardine Water System and Treatment Plant). In our assessment, we confirm there are no existing Hydro One Transmission assets in the subject area. If plans for the undertaking change or the study area expands beyond that shown, please contact Hydro One to assess impacts of existing or future planned electricity infrastructure. Any future communications are sent to Secondarylanduse@hydroone.com. • Be advised that any changes to lot grading and/or drainage within proximity to Hydro One transmission corridor lands must be controlled and directed away from the transmission corridor.	• Comment noted by the project team.

Ministry of the Environment, Conservation and Parks
Mark Badali, Regional Environmental Planner (REP) Southwest Region
Project Review Unit, Environmental Assessment Branch
Mark.Badali1@ontario.ca
	Email December 16, 2022:
	• Letter of acknowledgement included information regarding source water protection, with enclosed Areas of Interest document (August 2022) and supporting attachments.
	• The letter included a list of Indigenous communities to engage with for the project:
	  ○ Saugeen First Nation and Chippewas of Nawash Unceded First Nation
	  ○ Metis Nation of Ontario – Lands and Resources Department, Region 7
	• The letter identifies that the Saugeen First Nation and Chippewas of Nawash Unceded First Nation work together on consultation issues are known collectively as the Saugeen Ojibway Nation. They have requested that notices be sent to the Saugeen Ojibway Nation Environment Office with a copy to the Chief and Council of the Saugeen First Nation and Chippewas of Nawash Unceded First Nation.
	• Must consider sourcewater protection and vulnerable areas within the Class EA, such as WHPA, IPZ, event-based modeling areas (EBAs), and Issues Contributing Areas (ICAs).
	• For assistance in determining whether the proposed project will require new technical work and potentially require amendments to the source protection plan for this area please contact the Project Manager for Drinking Water Source Protection at the local source protection authority.
	• Requested that a draft copy of the report should be sent directly to mark.badali1@ontario.ca prior to filing the final report, allowing a minimum of 30 days for Ministry technical reviewers to provide comments.
	• Please ensure a copy of the final notice is sent to the Ministry's southwest region EA notification email account (eanotification.swregion@ontario.ca) after the draft report is reviewed and finalized.
		Email to MECP December 20, 2022:
		• Thank you for the ministries interest in this class EA. We look forward to further consultation as this file advances.
		
		Email December 22, 2022:
		• Notice sent to the Metis Nation of Ontario as requested
		• Conservation Authority is included on the mailing list for source water protection considerations.

Ontario Parks **Greg Wilson Greg.Wilson2@ontario.ca**	Email March 27, 2023: • Thank you for providing this notice. Please include Park Superintendent Scott Davidson and Senior Park Planner Katie Howard (both copied) on you contact list as the EA continues.	Email March 27, 2023: • We will add these individuals to the mailing list.

Contact Information	Comment	Action Taken
Other: **Katie Howard, Assistant Park Planner** **Katie.Howard@ontario.ca;** **Scott Davidson, Park Superintendent,** **Scott.Davidson1@ontario.ca; James Aldworth,** **Assistant Park Superintendent,** **James.Aldworth@ontario.ca**		
Ministry of Natural Resources and Forestry (MNRF) **Adam Kennedy, Regional Planner** **Land Use Planning and Strategic Issues Section (LUPSI)** **Southern Region, MNRF** **Adam.Kennedy@ontario.ca**	• Email April 4, 2023: • The Ministry of Natural Resources and Forestry (MNRF) received the Notice of Public Information Centre on March 22, 2023. Thank you for circulating this to our office. Please note that we have not competed a screening of natural heritage or other resource values for the project at this time. This response, however, does provide information to guide you in identifying and assessing natural features and resources as required by applicable policies and legislation, as well as engaging with the Ministry for advice as needed. • Please also note that it is the proponent's responsibility to be aware of, and comply with, all relevant federal or provincial legislation, municipal by-laws or other agency approvals. • MNRF provided links to guidance documents such as the Land Information Ontario website for natural heritage information online, the Ontario Oil, Gas and Salt Resources (OGSR) library website, and Make A Map. The resources can be used to identify natural heritage, natural hazards, or resources under the *Petroleum Wells & Oil, Gas and Salt Resources Act*. • MNRF also provided guidance with respect to the following acts: • **Petroleum Wells & Oil, Gas and Salt Resources Act:** Identified the need to consider whether the resources on the OGSR library are present. • **Fish and Wildlife Conservation Act:** Please note, that should the project require: ○ The relocation of fish outside of the work area, a Licence to Collect Fish for Scientific Purposes under the *Fish and Wildlife Conservation Act* will be required. ○ The relocation of wildlife outside of the work area (including amphibians, reptiles, and small mammals), a Wildlife Collector's Authorization under the *Fish and Wildlife Conservation Act* will be required. • **Public Lands Act & Lakes and Rivers Improvement Act:** Some Projects may be subject to the provisions of the *Public Lands Act* or *Lakes and River Improvement Act*. Please review the information on MNRF's web pages provided below regarding when an approval is, or is not, required. Please note that many of the authorizations under the *Lakes and Rivers Improvement Act* are administered by the local Conservation Authority. For more information about the *Public Lands Act*: https://nrip.mnr.gov.on.ca/s/nrip-busline?businessLine=Lands%2Band%2BWaters&language=en_US	Email: August 11, 2023: • Thank you for the MNRF letter for the Expansion of the Kincardine Water System and Treatment Plant project, and for the information on the Fish and Wildlife Conservation Act, Public Lands Act, and In-water Work Timing Windows. This information will be reviewed alongside the recommended plan when preparing the Environmental Study Report. Other actions: • MNRF LIO data was consulted, along with other MNRF databases, to prepare natural environment mapping for this project. • *Petroleum Wells & Oil, Gas, and Salt Resources Act* information was consulted and is documented in the ESR. • *Fish and Wildlife Conservation Act* and timing-windows information is included in the ESR. • Public Lands Act & Lakes and rivers Improvement Act – The project study area is not in an area where the *Lakes and Rivers Improvement Act* applies.

Contact Information	Comment	Action Taken

	• For more information about the *Lakes and Rivers Improvement Act*: https://www.ontario.ca/page/lakes-and-rivers-improvement-act-administrative-guide
	• After reviewing the information provided, if you have not identified any of MNRF's interests stated above, there is no need to circulate any subsequent notices to our office. If you have identified any of MNRF's interests and/or may require permit(s) or further technical advice, please direct your specific questions to MNRF.
	
	<u>Letter August 3, 2023:</u>
	• The Ministry of Natural Resources and Forestry (MNRF) received the Notice of Public Information Centre 2 on July 13, 2023 – with notice that the display information would be available to view only after the in-person session of July 24, 2023. Thank you for circulating this to our office.
	• MNRF only has a couple brief comments for your consideration. The comments are related to potential permits/ approvals from the MNRF, as well as clarification on when MNRF would impose any in-water work restrictions (re slide 20 of the display materials). Note, MNRF may not be able to determine if a permit/ approval is required until a detailed site plan has been reviewed.
	• MNRF provided the following updated guidance:
	• Fish and Wildlife Conservation Act: MNRF manages Ontario's natural resources and wildlife on behalf of Ontarians. The ministry administers the Fish and Wildlife Conservation Act, 1997 (FWCA) and supporting regulations. In part, the FWCA regulates the relocation of fish and wildlife. Accordingly, should your project require:
	  ○ The relocation of fish outside of the work area, a Licence to Collect Fish for Scientific Purposes will be required.
	  ○ The relocation of wildlife outside of the work area (including amphibians, reptiles, and small mammals), a Wildlife Collector's Authorization will be required.
	• To learn more about the management of Fish and Wildlife in Ontario, or to apply for permits or licenses, please see: https://nrip.mnr.gov.on.ca/s?language=en_US
	• Public Lands Act: The MNRF oversees the administration of Crown land, otherwise known as public lands in Ontario. Public land includes the beds of most lakes and rivers. Some activities on shore lands (both public and private) are also regulated by the MNRF.
	• For additional information on when a work permit under the Public Lands Act may be required, please see: Crown land work permits | ontario.ca.
	• In-Water Work Timing Windows: Where an MNRF permit/authorization is required the MNRF will apply specific in-water timing windows as a condition of approval applicable to that approval only. When multiple agency approvals are required for a single project, it is the responsibility of the	

Contact Information	Comment	Action Taken
	authorizing regulatory agency to set any in-water work timing windows in their authorizations. These timing windows can be based on the MNRF guidelines found at: https://docs.ontario.ca/documents/2579/stdprod-109170.pdf • Please also note that it is the proponent's responsibility to be aware of, and comply with, all relevant federal or provincial legislation, municipal by-laws or other agency approvals.	
Ministry of Citizenship and Multiculturalism (MCM) **Joseph Harvey, Heritage Planner** **Citizenship, Inclusion and Heritage Planning Unit** **Joseph.Harvey@ontario.ca**	• Email January 13, 2023: • Initial advice letter sent, which identified the areas of MCM interest in the Environmental Assessment process: ○ Archaeological resources, including land and marine ○ Built heritage resources, including bridges and monuments ○ Cultural heritage landscapes • Under the EA process, the proponent is required to determine a project's potential impact on known (previously recognized) and potential cultural heritage resources. • The letter identifies that the project should be screened for archaeological potential and provided guidance documents, and that an archaeological assessment shall be undertaken. • The letter also recommended completion of a Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment for the entire study area during the planning phase and summarized in the EA. Given the large area, MCM recommended completion of the Cultural Heritage Report early in the project, so preliminary potential project-specific impacts and recommended measures can be identified later. • The letter also identified that community input should be sought regarding locally recognized and potential cultural heritage resources, and some source suggestions were provided. • Engagement with Indigenous communities was recommended. • Technical cultural heritage studies and their recommendations should be incorporated into EA projects. Advise MCM whether any technical cultural heritage studies will be completed for the EA, and provide prior to the Notice of Completion or commencing work. If screening identified no known or potential cultural heritage resources, or no impacts to these resources, please include the completed checklists and supporting documentation in the EA report or file. • Please note that the responsibility for administration of the Ontario Heritage Act and matters related to cultural heritage recently transferred from the Ministry of Tourism, Culture and Sport (MTCS) to the Ministry of Citizenship and Multiculturalism (MCM). Individual staff roles and contact information remain unchanged. Please continue to send any notices, report and/or documentation to the contacts provided. • Email July 20, 2023:	Email August 9, 2023: Thank you for your email regarding this project. The Stage 1 Archaeological Assessment analysis is complete and the report is currently in progress. We look forward to circulating the Stage 1 Archaeology Assessment report to MCM when it is ready for review. A screening for potential built heritage resources and cultural heritage landscapes is incorporated into the EA process. The project team will continue to keep MCM informed as the EA continues, or if there are other documents to be reviewed. Other actions: • Stage 1 Archaeological Assessment completed and included in **Appendix D**. • Cultural Heritage memorandum prepared documenting the existing conditions in the study area near work areas, indicating properties older than 40 years are present near the study area, but that they are not impacted by the project. Checklist prepared and included in **Appendix D**.

Contact Information	Comment	Action Taken
	Thanks for providing us with the above referenced notice. Our records indicate that a Stage 1 archaeological assessment (under Project Information Form (PIF) P422-0040-2023) has yet to be submitted for MCM's review. Please note that archaeological concerns have not been addressed until reports have been entered into the Ontario Public Register of Archaeological Reports where those reports recommend that: 1. the archaeological assessment of the project area is complete and 2. all archaeological sites identified by the assessment are either of no further cultural heritage value or interest (as per Section 48(3) of the OHA) or that mitigation of impacts has been accomplished through excavation or an avoidance and protection strategy. Please let us know if the project has been screened for impacts to known (previously recognized) or potential built heritage resources and cultural heritage landscapes. We continue to recommend that a *Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment* be undertake for the project study area. Technical cultural heritage studies (e.g., Cultural Heritage Reports, Cultural Heritage Evaluation Reports, Heritage Impact Assessments etc.) should be sent for our review as part of the environmental assessment process.	
Shelley Crummer - Business Analyst, Business Services *Bluewater District School Board* *351 1st Avenue North, Chesley ON N0G 1L0* *1-226-908-5745 shelley_crummer@bwdsb.on.ca*	Email February 9, 2023: • Could you please add the following emails to the Study Mailing List: Shelley_crummer@bwdsb.on.ca; John_Bumstead@bwdsb.on.ca •	Email February 10, 2023: • Response from the Municipality of Kincardine that the individuals will be added to the mailing list. The individuals were added to the mailing list.
Nancy Michie, Chief Administrator Bruce Energy Centre	Email January 9, 2023: • Identified that the name and contact information was received from BM Ross and Associated Limited who advised that there was an EA underway for a water supply extension to Bruce Power site. • Bruce Energy Centre noted that, given that both the Treatment Plant and the distribution system to the north would be impacted by servicing the BEC Industrial Lands, it was suggested to submit comments to the study team for that EA. • The Management of the Bruce Energy Centre (BEC) wish to advise you and go on record that the Bruce Energy Centre request to have the potable Kincardine water supply extended to the Bruce Energy Centre. • The BEC noted that potable water service would be a major advance for attracting new industry to the BEC and for the Municipality	Email May 24, 2023: • Thank you for your comments requesting an extension of potable water to the Bruce Energy Centre. The Municipal Class EA is focused on considering upgrades to the existing Kincardine WTP and a potential water supply connection to the Bruce Power site. • The Bruce Energy Centre is not located within the study area boundary shown on the notice. Further extensions are not being considered at this time by the Municipality related to this project. • Your comments are appreciated and will be considered as the project proceeds with the EA process, and you have also been added to the mailing list for future updates.

Contact Information	Comment	Action Taken
	• BEC identified that a November 29 Open House (for another project), indicated that potable water lines are in place at the BEC and Ontario Hydro was involved when they were installed. • BEC understands that installation of potable water was placed on hold in the 1990s when Ontario Hydro was restructured. • BEC asked to be included in the plans and process for the proposed water line extension in the Bruce Energy Centre area. Please give consideration to our request and advise us of any further action required from the Bruce Energy Centre. <u>Email April 17, 2023:</u> • BEC identified its desire to connect to potable water in connection with the proposed expansion of the Kincardine Water System and Treatment Plant. • BEC listened to the online presentation from the Public Information Centre on the proposed expansion. BEC requests that it be included in the proposed water line extension and be maintained on the study contact list. <u>Email August 3, 2023:</u> I hereby submit our comment sheet from the July 24th 2023 Public Information Centre, in regards to the Expansion of the Kincardine Water System and Treatment Plant. <u>PIC#2 Comment form content:</u> The Bruce Energy Centre supports your proposal for the water line extension to provide water to the Bruce Power site. The Bruce Energy Centre feels that further extension to provide potable water to the Bruce Energy Center lands would be beneficial to the area, which will allow growth and development on the Bruce Energy Centre site lands.	<u>Email August 11, 2023:</u> It was great to meet you at PIC #2. Thank you for submitting the comment form and indicating your support for the above-mentioned project. The Municipality is aware of your interest in seeking future expansion to the BEC, although that is beyond the scope of this project. The project team will continue to keep you on the mailing list for any future updates.

3.4 Indigenous Community and First Nation Engagement

The following Indigenous communities were engaged as part of this study:

- Saugeen First Nation
- Chippewas of Nawash Unceded First Nation (Neyaashiinigmiing)
- Joint Chiefs and Councils of the Saugeen Ojibway Nation (SON)
- Chippewas of Kettle and Stony Point First Nation
- Metis Nation of Ontario c/o Lands and Resources Department Region 7 (added following MECP response)

The Indigenous communities and First Nations above were included on project notifications at key milestones of the project including the Notice of Study Commencement, PICs, and the Notice of Completion.

The Metis Nation of Ontario was notified December 22, 2022, following receipt of the MECP letter indicating that they should be included on the mailing list. The community was sent a hard copy notice and an email. Subsequent notifications occurred by email in accordance with their consultation protocols.

The following **Table 2** summarizes correspondence and engagement completed for this project:

Table 2: Indigenous Community Correspondence Engagement Log

Indigenous Community	Engagement Log
Saugeen Ojibway Nation	• Sent introductory letter and Notice of Study Commencement as a hard copy and email (sfn@saugeen.org) -November 24, 2022. • Sent Notice of PIC #1 (email) - March 23, 2023 • Sent Notice of PIC #2 (email) - July 12, 2023 • Follow up with First Nation by telephone (519-797-2781) to inquire about the email and ask if the community had any questions. Left a voicemail asking if the notice was received, and to let me know they had any questions. • No comments or concerns identified.

Indigenous Community	Engagement Log
Chippewas of Nawash First Nation	• Sent introductory letter and Notice of Study Commencement as a hard copy and email (chief.veronica@nawash.ca) -November 24, 2022. • Sent Notice of PIC #1 – March 2023 • Sent Notice of PIC #2 – July 12, 2023 • Telephone follow up July 13, 2023: - Spoke to the reception desk. Requested to send the email to executiveassistant@nawash.ca . Email sent to the executive assistant Diana Ross. Email July 13, 2023 -Confirmed receipt July 13, 2023. - No comments or concerns identified.
Joint Chiefs Environmental Office (SONEO)	• Sent introductory letter and Notice of Study Commencement as a hard copy and email (soneo@saugneenojibwaynation.ca) -November 24, 2022. • Notice re-sent December 22, 2022 to updated email address (environmentoffice@saugeenojibwaynation.ca). • Sent Notice of PIC #1 (email) - March 23, 2023 • Sent Notice of PIC #2 (email) - July 12, 2023 • Telephone follow up to inquire about receipt of the notice and to ask if the First Nation had any questions regarding the project. The organization requested that the email also be forwarded to associate.ri@saugeenojibwaynation.com. Email resent to this email address July 13, 2023. • No comments or concerns identified.
Kettle and Stony Point First Nation	• Sent introductory letter and Notice of Study Commencement as a hard copy and email (soneo@saugneenojibwaynation.ca) -November 24, 2022. • Notice re-sent December 22, 2022 to updated email address (fdesk@kettlepoint.org; consultation@kettlepoint.org). • Sent Notice of PIC #1 (email) - March 23, 2023 • Sent Notice of PIC #2 (email) - July 12, 2023 • Telephone follow-up call to the First Nation July 13, 2023 to ask about receipt of the email and if the community had any questions regarding the project. The receptionist identified that all notices are sent to the consultation email

Indigenous Community	Engagement Log
	address and forwarded internally to their consulting firm Three Fires. • No comments or concerns identified.
Metis Nation of Ontario	• MNO was added to the mailing list following the MECP letter. • Email sent December 22, 2022* as per MNO Lands and Resources website that indicates all consultation notices must be sent by email to consultations@metisnation.org • Sent Notice of PIC #1 (email) - March 23, 2023 • Sent Notice of PIC #2 (email) - July 12, 2023 • Notices were sent to the email address in accordance with their consultation protocol. • No comments or concerns identified.

Indigenous community correspondence is included in **Appendix C**.

3.5 Public Consultation

A key component of the MCEA process is public consultation. For this study, the main points of public consultation included:

- Notifying the public that the study was commencing;
- Receiving public input regarding the project including the evaluation criteria, environmental considerations, and evaluation of alternatives;
- To review and receive feedback on the preliminary preferred alternative including proposed mitigation measures; and
- To review the ESR during the 30-day comment period.

3.5.1 NOTICE OF STUDY COMMENCEMENT

The Notice of Study Commencement was distributed on November 23, 2022, as described in **Section 3.2**. One public comment was received from the Bruce Energy Centre requesting consideration of a potable water connection to the industrial and commercial business park. The project team responded that:

- The Municipal Class EA is focused on considering upgrades to the existing Kincardine WTP and a potential water supply connection to the Bruce Power site.

- The Bruce Energy Centre is not located within the study area boundary shown on the notice. Further extensions are not being considered at this time by the Municipality related to this project.
- Your comments are appreciated and will be considered as the project proceeds with the EA process, and you have also been added to the mailing list for future updates.

3.5.2 PUBLIC INFORMATION CENTRE 1 COMMENTS

A virtual Public Information Centre (PIC) was held online through the Municipality's YouTube channel (https://www.youtube.com/@MunicipalityofKincardine) between March 30, 2023 to April 28, 2023 to provide information about the project including the assessment of alternative solutions and the recommended solution. Presentation materials were also available to review on the Municipality's website (https://www.kincardine.ca/Water-and-Sewer/). Individuals were asked to provide comments to the project team by April 28, 2023.

As of July 2023, the PIC information had 90 views. A total of 8 public comments were received from the meeting.

Advertisement and notification for PIC 1 is described in **Section 3.2**. The PIC was held virtually with a pre-recorded PowerPoint and voice over style format. PIC displays are found in **Appendix B**.

A summary of comments by topic area is included below, along with responses or actions taken by the project team. Comments can be found in **Appendix C**.

Table 3: PIC 1 Public Comment Summary

Comment Topics	Response Provided and/or Action Taken
Providing potable water to Bruce Power Site • An individual opposed providing Bruce Power site with water, as it has struggled with its own domestic water supply for decades. The individual indicated that providing water to an industrial company sets a terrible precedent. The individual does not want to reduce capacity for future residential development. The individual asked why can they (Bruce Power) not use this same expertise for Bruce's drinking water coming from the same massive water supply as the Municipality's?	• Response provided that the project team will review the comment as the project team advances the EA process and that this is included in that assessment.
General Opposition to using the Stormwater Management (SWM) pond site for any building • Individual opposed the water treatment building at Stoney Island Crescent. • Indicated that the recent flood in the subdivision, shows that it is not an appropriate site for any building.	• Response provided that the project is still underway, and the comment was provided to the project team so they are aware as they continue the evaluation. • The PIC 1 location was conceptual only, and a revised layout with the BPS at the rear of the property, was provided in PIC 2.
Local Flooding at Stoney Island Crescent • Individuals indicated that a stormwater pond and local ditches routinely fills and the drainage changes or a new building may increase potential for flooding. • The storm on April 5, 2023 was another occurrence of flooding. 1-2 feet of water was identified in the areas. • Noted that when building the subdivision, the Town of Kincardine had a condition that the owner had to dig a dry pond with drainage and a spillway to control flood waters. This was done on Block 12 and the land was dedicated to the town of Kincardine. • Concerns about local drainage changes which may increase flooding. • The concern is that, when converting the municipally owned land to accommodate the booster pumping structure, the capacity to withstand heavy rain events will be compromised, placing the adjacent properties at risk for flooding. • Concerns include flooding causing unmanaged overland water flow which will cause erosion of the ravine and shoreline.	• Response provided to residents raising these three issues: – The location of the booster station identified in Public Information Centre #1 was conceptual and based on the need to boost water pressure downstream and mitigate upstream pressure issues. Potentially suitable municipal parcels were considered nearby, including the Stormwater Management Site. – Further evaluations are underway to consider local site zoning, environmental protection areas, as well as the flooding issues you have mentioned. This evaluation would be presented at a second Public Information Centre to be held this summer. – Issues related to local flooding associated with the existing SWM pond have also been provided to the Municipality to consider as part of their maintenance requirements. – Individuals raising the flooding and land use comments were added to the mailing list and invited to attend PIC 2. • These factors were considered in Alternative Designs as part of the assessment and conceptual site plan
Loss of Open Space • Local community members indicated that they use the open space near the road as parkland as it is the only open space along Stoney Island Crescent • The area is used for over land water flow, as there is a ditch that runs the length of my property with good water flow in the spring and fall. • Concern if the watercourse is obstructed with a pump building (or a change in drainage) could result in more flooding or property damage to nearby homes. • The proposed booster pumping site is the sole greenspace for the neighbourhood crescent. A structure on this site will deter this recreational park land use. • The side lands beside this drainage pond provide year-round outdoor entertainment for the neighbourhood families.	
Zoning Changes: Open Space and Environmental Protection Areas • Comments that proposed building lot is municipal owned but is within the boundaries of the SVCA, as this area is at risk for flooding, and was specifically designed and zoned for the purposes of storm water management. • The individuals want the zoning to remain as-is. Identified that SVCA and municipal policies have restrictions for Open Space and Environmental Protection Areas	
Construction Noise and Disruption Consider local noise and disruption on Stoney Island Crescent	• Contractor will be required to adhere to the Noise By-Law timing for construction works.

Comment Topics	Response Provided and/or Action Taken
	Mitigation measures incorporated into the Environmental Study Report
Suggestions for other BPS locations near Stoney Island Crescent Two suggestions were made for other locations near Stoney Island Crescent to consider: A former municipal well building on the corner of the Crescent and Bruce Road 23, or areas across Bruce Road 23 (east side) from the Crescent	• The SWM pond site was conceptual due to available municipal land and suitable hydraulic conditions. • Figure included in the PIC materials about these additional areas. Should other parcels near Stoney Island Crescent and Bruce Road 23 become available, the municipality may wish to investigate the hydraulic suitability of those sites as well. Final siting will be confirmed in detailed design.
Possible Connection to the Bruce Energy Centre: Understanding that you are involved in the EA taking place for the potable water to Bruce Power project how could I assist to improve the chances of the project scope encompassing the BEC as well? Any suggestions would be appreciated.	• The BEC is located outside of the study area for the Municipal Class EA, and no further extensions beyond Bruce Power site are planned as part of this EA. I understand that you have emailed the Municipality directly which ensures they are aware of your request.

3.5.3 PUBLIC INFORMATION CENTRE 2

An in-person PIC was held on Monday July 24, 2023 at the Kincardine Council Chambers from 6:00 pm to 8:00 pm. The purpose of PIC 2 was to provide an update on the project, discuss updates to the project since the last PIC, describe the evaluation of Alternative Designs, and the preferred Design Alternative for the project. Advertisement and notification for PIC 2 is described in **Section 3.2**.

PIC displays were arranged around the room and members of the project team and municipal staff were available to discuss questions or comments with attendees. Individuals were encouraged to submit written comments for review by the project team.

A total of 15 individuals attended PIC 2, including local residents near Stoney Island Crescent. No written comments were received at the public meeting, although individuals were invited to provide comments until August 8, 2023.

The following provides a summary of discussions with participants from PIC 2:

- Concerns expressed about loss of open space and potential drainage concerns.
- Explained that the site is a possibility, but the general area around Stoney Island Crescent was being considered.
- Concern that the SWM pond would be impacted. The intention is that the pond would not be directly impacted.
- Individuals noted that there is vegetation within the pond. The Municipality may need to consider rehabilitation of the pond or culverts in the area to ensure drainage is maintained.
- In detailed design, further evaluations regarding natural environment and drainage would be needed once the footprint is known.
- Private driveway (access) was raised as a concern. Access using the easement would need to be discussed with the property owner.
- Individuals asked whether noise from the facility was known. The project team identified that the structure would be designed with MECP requirements in mind as part of the approvals process. Noise from the facility would be addressed in detailed design.

Following the PIC, the Bruce Energy Centre submitted written comments in support for the project, but requested consideration for a future watermain connection to their business park. A response was provided that the BEC business park is outside of the study area and an extension beyond the Bruce Power site is not within the scope of this

assignment. The Municipality is aware of BECs interest in a future connection, and the project team continued to keep BEC aware of the project.

PIC 2 displays are found in **Appendix B**. A summary of PIC 2 comments is provided in **Table 4**.

Table 4: PIC 2 Public Comment Summary

Comment Summary	Consideration in the EA
Stoney Island Crescent Resident Telephone call July 12, 2023: • A resident of Stoney Island Crescent called the project team following receipt of the Notice of Public Information Centre 2. The individual asked whether the SWM pond site was still being considered. The individual expressed concern with the site and noted previous flooding issues when the pond overflowed, and the loss of greenspace. • The project team member discussed that PIC 1 identified that a booster pumping station was needed in the general area of Stoney Island Crescent to meet hydraulic requirements. The project team took comments received about flooding and is looking at Stoney Island more generally if other properties are also available. The individual was invited to PIC 2 to learn more about how comments from PIC1 were considered, and the approach moving forward.	• Comments about flooding and loss of greenspace from PIC1 were used to optimize the site plan and evaluation on the SWM pond site to minimize the footprint. • The BPS concept at PIC2 was shifted to the rear of the site to avoid areas near the street away from ditching and to maintain access to the largest portion of the land for residents.
BPS: Stoney Island Crescent SWM pond Site • A resident of Stoney Island Crescent expressed concerns with the possible SWM pond site for the BPS. • The individual suggested that a more suitable location should be found	Email July 24, 2023: Thanks for taking the time to share your comments with us. These will be included in our considerations as we advance the EA process.

Comment Summary	Consideration in the EA
elsewhere between Kincardine and Bruce Power. • The existing pond has wildlife and vegetation species, one of which is Snapping Turtle a Species of Special Concern. The SWM pond property serves as parkland/greenspace for families in the Stoney Island Crescent neighbourhood. • The property is also in a SVCA flood risk area. The ditch along the crescent has previously overflowed and the resident expressed a concern about flooding impacts.	Other actions: • Comments about flooding and loss of greenspace from PIC1 were used to optimize the site plan and evaluation on the SWM pond site to minimize the footprint. • The BPS concept at PIC 2 was shifted to the rear of the site to avoid areas near the street away from ditching and to maintain access to the largest portion of the land for residents. • Further environmental studies will be required once the site and footprint are confirmed. • No impacts to the SWM pond are anticipated to construct the BPS. Further drainage studies may be required, including permitting with SVCA.
Inverhuron and District Rate Payers Association Telephone call August 3, 2023: • Telephone call from the President of the Inverhuron and District Ratepayers Association. The individual asked what kind of input we were looking for and asked to receive an update on the project. • A project overview was provided by a member of the project team. The study area is large but work is confined to three primary areas: the Kincardine WTP, a BPS site to be located near Stoney Island	Email August 3, 2023: Thank you for the telephone call and speaking with me about the Kincardine Water System and Treatment Plant project. I am sending you a copy of the most recent notice, for your information and if you want to share it with your Inverhuron and District Ratepayers Association. The proposed work will occur in three main areas: 1) The Kincardine WTP where work will occur inside the existing facility, 2) proposed booster pumping station near

Comment Summary	Consideration in the EA
Crescent, and a short extension of the existing watermain. • The individual identified that residents in the past have been concerned about high water costs. The individual was pleased that there was no change in water access or costs in cottage areas. He will communicate the nature of the project with his group. • The project team offered to send a follow up email with background information for reference.	Stoney Island Crescent, and 3) short extension of the existing watermain from Albert Street to the Bruce Power gate on Concession Road 2. The full PIC #2 displays are on the Municipal website if interested: https://www.kincardine.ca/en/living-here/water-and-sewer-services.aspx A map is provided below from the Public Information Centre showing the existing watermain, and the proposed extension (dotted line) to the Bruce Power site. (Excerpt provided – Slide 17 "Preferred Watermain Design: Extension to Bruce Power site" Thank you again for your interest in this project. We will add you to the project mailing list for further notices or updates.
Request for PIC displays	• PIC displays were sent to individuals requesting them. • Displays were posted on the Municipal website following the PIC.

In addition to the above, a letter was also received from the Public Workers' Union (PWU) on July 26, 2023 in relation to the study. The project team confirmed receipt of the letter. A second letter dated August 14, 2023 from the PWU asked that the original letter be withdrawn, which was done as requested.

3.5.4 NOTICE OF COMPLETION

At the completion of the project, the project mailing list will be notified by a Notice of Completion, including Indigenous communities on the MECP project list provided.

Should any comments be received during the 30 day public review period, the project team and Municipality of Kincardine will communicate directly with the individuals to discuss and seek to resolve the comments.

4 Existing Conditions

Phase 2 of the Municipal Class EA study includes preparing an inventory of the existing natural, social and cultural environment for the study area. Alternative Solutions are then identified and evaluated, based on the available information.

4.1 Technical Environment

4.1.1 EXISTING WATER SUPPLY INFRASTRUCTURE

The Kincardine WTP has a current rated gross capacity of 11,563 cubic meters per day (m^3/d), with an intake capacity of 18,750 m^3/day in accordance with the MECP Municipal Drinking Water Licence (MDWL No. 088-102) and Drinking Water Works Permit (DWWP No. 088-202). The maximum day and average daily water flow rates were approximately 6,025 and 3,368 m^3/d, respectively, based on the 2022 Kincardine Drinking Water System (DWS) Annual Water Summary Report.

The Kincardine WTP process generally consists of raw water (low lift) pumps (drawing from Lake Huron), coagulation, high-rate clarification, filtration, chlorination, and high lift pumps that supply the distribution system. More specifically, the treatment process consists of pre-chlorination at the intake (during periods when Zebra mussel controls are in place), two (2) Actiflo™ units with a loading rate of 40 meters per hour (m/h) at the rated capacity, four (4) dual-media filters with a loading rate of 8.7 m/h at the rated capacity (or 11.6 m/h with one filter out of service), and post-chlorination with contact time (CT) for disinfection achieved in a multi-chambered underground reservoir. Three high lift pumps supply treated water from the clear well to the distribution system.

4.1.2 WATER SUPPLY DEMAND

Existing and future population and water demand projections for the Kincardine Drinking Water System (DWS) were based on the 2022 Water and Wastewater Servicing Master Plan Update (BM Ross, July 2023) (WWWMP). In general, future maximum day demands were extrapolated to 2043 and considered growth scenarios per the following sources:

- 2021 Official Plan
- Ontario Ministry of Finance Population Projections (2021 – 2046)
- 2021 Development Charges Background Study and By-Law
- Bruce County – “Good Growth”

In general, the projected future populations did not vary significantly between the various sources. As such, the WWWMP projections considered only the scenarios resulting in the lowest to highest growth values to establish the potential range of demands.

When determining future capacity needs, the WWWMP considered the following additional scenarios:

- Reference Demands – existing usage in addition to the annual growth rate.
- Commitments – Already approved developments that are likely to move forward to construction and need to be considered in terms of servicing. It was assumed that the Municipality would maintain a similar level of commitments over time.
- Bruce Power – maximum day demand of 32 L/s (~2,765 m³/day) based on projections provided by Bruce Power for the site.

Table 5 provides an overall summary of maximum day flow projections based on low to high population estimates and based on meeting growth plus commitments (Kincardine servicing needs) and with supply to the Bruce Power site.

Table 5: Summary of Maximum Day Demands Per Scenario

Year	Growth Scenario	Servicing Scenario	Maximum Day Demand (MMD) (m³/day)
2021	--	Existing	6,954
2043	Low	Reference + Commitments	10,263
		Reference + Commitments + Bruce Power	13,027
2043	High	Reference + Commitments	11,444
		Reference + Commitments + Bruce Power	14,208

This information was used as the basis for assessing water treatment capacity needs for the future, in developing and evaluating alternative servicing and design solutions.

4.1.3 PREVIOUS STUDIES

A Comprehensive Performance Evaluation (CPE) was undertaken for the Kincardine WTP (Stantec, 2021) with the objective of confirming the current capacity of the WTP based on actual system component hydraulic capacity and potential limiting factors to achieve compliance with disinfection targets. The CPE provided various high-level expansion alternatives depending on projected water demands, including expansion of

the Kincardine WTP to a gross capacity of 15,250 m^3/d or about 13,725 m^3/day assuming 10% in-plant water use, which would require the following upgrades:

1. Increase raw water capacity – increase the duty capacity of low lift pumps (LLPs) from 12,614 m^3/d to a minimum of 15,250 m^3/d.

2. Increase sedimentation capacity – re-rate the ActiFlo™ process to a minimum of 53 m/h and install an in-line mechanical mixer to augment coagulation.

    - A capacity increase of the ActiFlo™ process is possible since the current rating is based on relatively conservative design criteria. Potential improvements for rapid mixing of coagulation chemicals should also be completed.

3. Increase filtration capacity - bring the 5th filter basin into service (add media, piping, valves, and instrumentation).

    - Filter 5 (not currently in use) could be brought online with the addition of filter media, piping, valves, and instrumentation. With Filter 5 added to the permit, the surface area with the largest filter out of service would increase in order to accommodate higher filter loading rates while remaining within the Design Guidelines for Drinking-Water Systems, 2008 (referred to herein as MECP Guidelines) issued by the Ministry of the Environment (MOE, now MECP).

4. Increase disinfection capacity – disinfection capacity could be increased by either increasing the chlorine dose or by adding a new ultraviolet (UV) disinfection process.

In summary, none of the four categories of process upgrades described above were expected to require a building expansion at the existing Kincardine WTP.

The expansion alternatives from this previous study formed the basis for further investigation as to capacity expansion potential as part of the evaluation of Alternative Solutions in **Section 6.2**.

4.1.4 HYDRAULIC MODELING ANALYSIS

The Kincardine water system hydraulic model that was updated as part of the recent 2022 Water and Wastewater Servicing Master Plan Update (BM Ross, 2023) was used in order to establish existing distribution system baseline (existing) conditions and proposed future conditions under planned development. This hydraulic model was updated to include the proposed demands to service the Bruce Power site.

The following subsections provide a summary of results of additional hydraulic modeling undertaken by Stantec to assess the ability of the distribution system to meet the future demand conditions including the Bruce Power site, and to identify potential system

upgrades. Refer to **Appendix F** for a copy of the hydraulic modeling memorandum for further details.

It should be noted that the demands associated with future growth are based on the modeling scenarios which is consistent with the Master Plan update.

4.1.4.1 Demands

A brief description of both the existing and proposed condition network demands is provided below in **Table 6**.

Table 6: Demand Summary (Scenario and Development Area)

Scenario	Maximum Day Demand (MDD)	Peak Hour Demand (PHD)
	(L/s)	(L/s)
Existing Conditions	80.5	114.4
Future Conditions (Ex + Planned Future Growth) (1)	149.4	186.4
Future Conditions (Ex + Planned Future Growth + Bruce Power) (2)	181.4	218.4

Table Notes:

1. *Planned future growth includes planned development in the Kincardine, Lakeshore, Inverhuron & Concession 2 areas.*
2. *MDD and PHD demands for Bruce Power site equivalent to 32 L/s. This assumes supply to Bruce Power site to meet PHD would not exceed the MDD target of 32 L/s and that local storage and pumping facilities within Bruce Power site would address peak hour demands.*

It should be noted that the above future maximum day and peak hour demands exceed the 20-year projections from the WWWMP update, as the model also includes other development parcels that fall within the settlement boundaries but are not likely to develop within the study timeline. In addition, the model uses peaking factors per MECP guidelines rather than calculated peaking factors based on recent demand data which was the basis for the WWWMP projections. As such, modeling results are considered to be conservative.

4.1.4.2 FUTURE CONDITIONS ANALYSIS

Proposed future conditions for the Municipality, consisting of existing and planned future growth, were modeled using the WaterCad model from the WWWMP Update. This

analysis represented the “baseline” future growth condition. Modeling then considered the additional servicing of the Bruce Power site, and results were then compared to the baseline condition to assess changes in the level of service (flow availability and pressure).

In general, the future conditions analysis assumed the following system conditions:

1. MDD based on high-lift-pump (HLP) off, standpipe at MWL of 248m
2. MDD based on 2 HLPs on, standpipe at LWL of 243m
3. PHD based on HLP off, standpipe at MWL of 248m
4. PHD based on 2 HLPs on, standpipe at LWL of 243m

Analysis indicated little difference between pressures in the distribution system based on the LWL/pumps on or MWL/pumps off settings under the same demand conditions.

A summary of the hydraulic calculation results under future conditions with and without the Bruce Power site demands is provided in **Appendix F**. Modeling of supply to the Bruce Power site assumed the following:

- Supply to the Bruce Power site assuming no additional BPS’s.
- Supply to the Bruce Power site assuming a new BPS at various locations.

The following key criteria was applied when reviewing the modeling results:

- Pressures at nodes to achieve the minimum 40 psi (276 kPa) pressure under maximum day and peak hour flow conditions.
- Pressure changes due to the increased flows should be kept minimal, wherever possible, to maintain level of service to existing users.

Additional criteria included consideration for high pressure conditions, should an additional BPS be constructed. In general, an 80 psi (552 kPa) threshold was used as an indicator of high pressure areas that may require installation of pressure reducing valves to protect residential plumbing. A 100 psi (689 kPa) threshold was also considered for the watermain, however it should be noted that the actual watermain should be capable of operating at pressures above this value based on the pressure class of pipe.

Review of results indicates that supply to the Bruce Power site without additional booster pumping would result in pressures along several sections dropping below the minimum 40 psi (276 kPa) threshold, which would not meet MECP guidelines and would represent a significant reduction in the level of service. Therefore, servicing to the Bruce Power site requires an intermediate pump station located between the Kincardine WTP

and the proposed termination point for servicing of the site. The proposed BPS location would ideally be in proximity to the 300mm diameter watermain that extends along Bruce Road 23. As part of the Class EA screening process, municipally owned parcels were initially reviewed as potential BPS sites. Of several sites identified and screened based on location, size, and proximity to key infrastructure, two (2) sites were shortlisted for further detailed analysis. These included:

- Site A – Riggin Park
- Site B – Stoney Island SWM Block

It should be noted that additional system headlosses are anticipated within the Bruce Power site to convey flows from the municipal connection to the on-site facilities. However, it is expected that a new pump station will be required within the Bruce Power site to convey flows throughout the site and therefore pressure requirements at property line are considered to be approximately 45 psi (310 kPa), which is set to be marginally greater than the minimum 40 psi (276 kPa) target per MECP minimum pressure guidelines to account for additional local losses associated with the monitoring chamber and backflow prevention that will be required at this point of connection.

4.1.4.3 Key Findings and Conclusion

Based on the above operating scenarios, key findings related to each of the shortlisted sites are as follows:

- Upon comparing baseline conditions against supply to the Bruce Power site with a BPS at either Site A or Site B, it was noted that more significant pressure drops (upwards of 25 psi or 172 kPa) were noted for Site A versus up to about 11 psi (76 kPa) for Site B under maximum day demand conditions. Although pressures remained above 40 psi (276 kPa) for Site A, the significant pressure drops of greater than 20 psi (138 kPa) resulted in servicing pressures marginally above the 40 psi (276 kPa) minimum threshold. This would represent an approximate 30% reduction in pressure in localized areas which was considered to be a more significant impact to existing level of service.
- Pressure increases over baseline conditions were comparable between the shortlisted sites under the maximum day demand scenario, with Site A showing select nodes increasing in pressure by up to 7 psi (48 kPa), and Site B showing select nodes increasing in pressure by up to 11 psi (76 kPa).
- Under peak hour conditions, comparison to baseline conditions indicated comparable drops in pressure of about 10 psi (69 kPa) for Site A and 14 psi (97 kPa) for Site B.

- Pressure increases over baseline conditions were more noticeable for Site A at 26 psi (179 kPa) for Site A, and 10 psi (69 kPa) for Site B. The noticeable increase in pressure for Site A corresponded to a total pressure reading nearing 100 psi (689 kPa).
- There are areas within the distribution system where pressures exceed 80 psi (552 kPa), however this was also noted under the baseline condition analysis. While there are no concerns with regards to the ability of the watermain to operate at this pressure, local Pressure Regulating Valves (PRV) may be required to protect residential plumbing systems.
- Additional modeling analysis was also undertaken based on a maximum day with fire flow demand condition. Under this scenario, the demand associated with the Bruce Power site was maintained at 32 L/s. Fire flow analysis only considered impacts as it relates to the Kincardine system as fire flow provision to the Bruce Power site is not required. The analysis assumed a residual pressure limit of 20 psi (138 kPa) which is consistent with MECP guidelines. Under this scenario:
    - Significant reductions in available fire flow were noted for both Site A and Site B, however upon review of the data it was noted that the locations were in the vicinity of the WTP. Furthermore, available fire flow was still noted as being significant and above the minimum fire flow target of 40 L/s.
    - Based on a target fire flow of 40 L/s, approximately 8 nodes under the baseline condition are below this threshold. With a BPS at Site A, 13 nodes fall below. For Site B, only 2 nodes are below 40 L/s which represents an overall improvement.

As noted by the summary results in **Appendix F** and summarized above, there appear to be areas in which pressures are more significantly impacted due to placement of a BPS at Site A. As a result, Site B was selected as the preferred area to site a BPS as it can provide the added pressure to meet demand needs with less impacts to pressures compared to the baseline condition. Furthermore, larger pressure variations, either higher or lower over baseline, were still considered to be acceptable with respect to maintaining adequate level of service. Based on the analysis, the design of the proposed new BPS in the Site B vicinity should consider the following:

- With the additional 32 L/s MDD for the Bruce Power site, boosting flow by a total dynamic head (TDH) of about 17 m at Site B would provide pressure exceeding the minimum 45 psi (310 kPa) threshold at the termination to the Bruce Power site assuming peak hour conditions elsewhere in the Kincardine system.
- The Bruce Power site requires a higher HGL within its distribution network, and therefore on-site pumping will be required in addition to system storage. The

proposed servicing from the Kincardine water supply is not intended to interconnect directly with the Bruce Power distribution system but is anticipated to be terminated at the Bruce Power site property line near Tie Road and Concession Road 2. From there, on-site pumping within the Bruce Power site will boost pressure as needed to meet the site-specific needs of their system. As such, there will be times in which the Bruce Power site will not be actively requesting water. During those periods of time, pumps within the new BPS are not required to operate as the HGL of the system is sufficient to meet downstream demand based on the WTP and standpipe HGL. The design of the BPS should allow for flows to bypass pumps in this event which will reduce overall energy consumption.

- Actual pump sizing will be subject to further discussions with the Municipality and potential refinement to the near-term water demands from the Bruce Power site. At minimum the BPS should contain two (2) pumps, each rated to supply sufficient water at the targeted TDH to meet downstream demands including the Bruce Power site. A smaller jockey pump could also be considered as it is anticipated based on review of available data that demands within the Bruce Power site are currently below the future maximum day demand of 32 L/s. Provision of an “average demand” pump would likely meet Bruce Power site demands under all but high demand events and would result in less pressure impacts within the Kincardine system.

4.1.5 LOCAL TRANSPORTATION NETWORK

The Municipality of Kincardine is located on Lake Huron. Highway 21 is the primary provincial highway within the study are which connects the communities of Kincardine and Tiverton. Highway 9 provides a connection to the southeast of Kincardine.

Bruce County responded to the Notice of Study Commencement and identified that Bruce Road 23 (Queen Street) is in the study area. The County is interested in impacts that might affect the County Road allowances and indicated that it is a willing participant to identify opportunities to work with its lower tier counterparts to upgrade infrastructure where it may be mutually beneficial (correspondence - Bruce County, November 24, 2022).

4.2 Socio-Economic Environment

A summary of the existing land use, provincial and municipal planning and policy context is provided below as it relates to the Kincardine WTP and the study area for the extension to the north. As the study aims to serve an extension of the water supply system north from the existing watermain (near Inverhuron Provincial Park), the planning documents reviewed consider long-term recommendations and vision for the study area and surroundings.

A summary of the provincial and municipal planning and policy context is provided that this study will consider during the identification of alternative solutions, evaluation and recommendations.

4.2.1 FEDERAL POLICIES

The Kincardine Municipal Airport (CYKM) is a Transport Canada registered airport. The airport is located north of the Municipality of Kincardine between Highway 21 and Bruce Road 23. As it is federally regulated, additional permitting may be required for any work that may affect the airport property or its operations, however no impacts to the airport are expected.

The Bruce Nuclear Power Plant (Bruce Power) site is located within the study area. The Bruce Power website lists itself as Canada's only private sector nuclear generator and is regulated by its independent regulator, the Canadian Nuclear Safety Commission (CNSC). Due to the nature of work within a federally regulated environment, consultation with Bruce Power is recommended to confirm any specific regulatory requirements related to work on the site. The current project extends to the Bruce Power site boundary only.

Lake Huron is a listed waterway on the Schedule of Navigable Waters within the *Canadian Navigable Waters Protection Ac*t. The Act outlines major and minor works that may occur in navigable water. Works within a navigable waterway are subject to additional permitting under the Act. No work is anticipated to occur within Lake Huron, although this should be confirmed in conceptual design.

4.2.2 PROVINCIAL POLICY STATEMENT

The *Provincial Policy Statement* (PPS 2023) is issued under Section 3 of the *Planning Act*. Section 3 of the Act states decisions affecting planning matters "shall be consistent with" the PPS. The consistency of the proposed improvements (defined as "infrastructure" in the PPS) with the relevant *Sewage, Water and Stormwater* in Section 3.6 of the PPS is summarized as follows:

Planning for sewage and water services shall:

a) accommodate forecasted growth in a manner that promotes the efficient use and optimization of existing: municipal sewage services and municipal water services; and existing private communal sewage services and private communal water services.

b) ensure that these systems are provided in a manner that:

    1. can be sustained by the water resources upon which such services rely;

2. is feasible and financially viable over their lifecycle,
3. protects human health and safety, and the natural environment including the quality and quantity of water; and
4. comprehensive municipal planning for these services, where applicable

c) promote water and energy 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 3.6.2, 3.6.3, 3.6.4, and 3.6.5 of the PPS; and

f) integrate with source protection planning

For clarity, where municipal sewage services and municipal water services are not available, planned or feasible, private communal systems are the preferred form of services for multi-unit/lots or development to support protection of the environment and minimize potential risks to human health and safety. Where those services are not available or private communal systems are not available planned or feasible, individual on-site sewage or water services may be used provided that site conditions are suitable for the long-term provision of such services with no negative impacts.

Planning authorities have the ability to consider the use of long-term impacts of individual on-site sewage or water services at the time of the official plan review or update.

Through the PPS, the province seeks to ensure that its resources are managed in a sustainable manner to protect essential ecological processes and public health and safety, minimizing environmental and social impacts to meet long terms needs.

4.2.3 LOCAL POLICIES

Official Plan mapping was consulted as part of this project to identified existing land use policies and natural heritage features within the study area. Official Plan mapping is located in **Appendix D**.

4.2.3.1 Bruce County Official Plan

Bruce County is the upper-tier land use planning entity, and the policy framework is provided by the Bruce County Official Plan (BCOP) (adopted 1997, as amended and approved 2010). Bruce County also has eight lower tier municipalities that each have their own individual OP to govern local policies and land use.

The stated goal of the OP is to "to establish the policy framework to guide the physical, social and economic development of the County and to protect the natural environment within the County to the year 2021." The County is currently undergoing "Plan the Bruce", which will seek to update the land use policies for the next 25 years to 2046. The OP Schedules provide land use mapping relevant to areas outside of the Municipality of Kincardine.

Schedule A of the BCOP identifies that the property between Bruce Road 23 and Highway 21 are predominately Agricultural. Hazard areas are also present associated with valleys and watercourses which align with SVCA regulatory limits, as well as Inverhuron Provincial Park.

An OP Amendment – section 5.5.13.30 applies to the east corner of Albert Road and Concession 2 is present in the study area and pertains to the severing of the parcel only to a minimum parcel size of 20 acres.

The Official Plan also includes Schedule B which identifies the county road network.

Schedule C Natural Environment Areas were considered as part of the Natural Environment background review, as described in **Section 4.3**. Relevant Official Plan Mapping is included in **Appendix B**.

4.2.3.2 Municipality of Kincardine Official Plan

The Municipality of Kincardine Official Plan (Kincardine OP, 2021) includes policies to direct current and future land use in the community, including addressing growth and infrastructure needs. The Municipality of Kincardine maintains and manages municipal drinking-water systems.

Municipal lands included the settlement areas within the community of Kincardine, and generally includes land west of Bruce Road 23. A business park between Concession 2, Bruce Road 23, and Bruce Road 20, and Tie Road is included in the plan boundaries at the northern extent. The plan boundaries do not include Inverhuron Provincial Park.

Natural Heritage system mapping (Schedule A and B) was reviewed as part of the Natural Environment background review for this project, as described in in **Section 4.3**. Relevant Official Plan Mapping is included in **Appendix B**.

4.2.3.3 Water and Wastewater Master Plan

The Municipality recently completed the *Water and Wastewater Servicing Master Plan Update* (2023) for the communities of Kincardine, Tiverton and Lakeshore area from Kincardine to Inverhuron. The Master Plan was last updated in 2018 and since that time there has been residential and non-residential growth, additional development proposals and new and upgraded infrastructure within the systems.

This Class EA is being undertaken concurrently with the Water and Wastewater Servicing Master Plan Update. Information from the Master Plan, including proposed growth projections and the updated hydraulic model, were used in this Class EA Study.

4.3 Natural Environment

A Natural Heritage desktop-level screening was completed to identify environmental features within the Study Area including terrestrial and surface water features. The study area included the existing Kincardine WTP, as well as an area west of Bruce Road 23 and extending to the Bruce Power site. The study area included a 120 m buffer around the existing watermain, Bruce Road 23, and extending to the Bruce Power site.

Five potential preliminary areas around municipal properties were considered for a BPS. These locations, including adjacent lands (within 120 m of the sites), were the focus of a more detailed review of natural environment features, including designated natural areas, fish communities and fish habitat and potential Species at Risk (SAR) and Species of Conservation Concern (SOCC). Mapping was based on MNRF Land Information Ontario sources, as well as OP mapping.

The study area would utilize existing municipal or county right of ways to place any watermain extension infrastructure. For the purposes of the background review, two municipal right of way areas were considered:

- A western route along the Lakeshore communities where the existing Municipality of Kincardine watermain is located along roads such as Upper Lorne Beach Road and Victoria Street to Albert Road.
- An eastern route along Bruce Road 23 and Bruce Road 15 where no Kincardine watermain is currently present.

The Natural Environment Background review technical memorandum is included in **Appendix E1**.

4.3.1 DESIGNATED AREAS

No Provincially Significant Wetlands, or Areas of Natural and Scientific Interest (ANSI) are present in the study area.

Two non-provincially significant wetlands (non-PSWs) were identified in the mid region of the Study Area: the Lorne Beach Swamp and an unnamed wetland. Wooded areas associated with both non-PSWs are mapped by the MNRF, indicating the wetlands are mostly comprised of treed swamp, however there may be inclusions of other wetland types such as marshes or open water.

Several unevaluated wetlands were identified on Kincardine OP mapping, including several significant woodlands within the Study Area. There is a relatively large wooded area located in the northern portion of the study area west of Bruce Road 23 near Tiverton Creek, over half of which is considered significant. Both route options encounter this large wooded area, although the eastern route contains much less woodland coverage than the west route option. No work is required in this woodland as part of this project since no new watermain is required in this area.

The Study Area also includes the Inverhuron Provincial Park operated by Ontario Parks, and the Stoney Island Conservation Area operated by SVCA. SVCA Regulation Limits are present and associated with wetlands, watercourses, Stoney Island Conservation Area, and Lake Huron shoreline.

4.3.2 VEGETATION

The Study Area is within the Eastern Temperate Deciduous Forest Vegetation Zone. Forest communities contain areas of both highland (e.g., Sugar Maple and American Beech) and lowland (e.g., Green Ash and Silver Maple) species. Background review of NHIC identified three plant communities (with listed s-ranks of S1-S3) which are described below based on MNRF 2023 data:

- Little Bluestem – Long-leaved Reed Grass – Great Lakes Wheat Grass Dune Grassland, S-Rank S2
- Sea Rocket Sand Beach, S-Rank S2, S3
- Slender Wheat-Grass Sand Barren, S-Rank 2

Ecological Land Classification (ELC) mapping is recommended to be conducted in Detailed Design to confirm vegetation present, however the following features are noted based on available desktop sources:

- Vegetation is minimal in the area around the Kincardine WTP as it is located in a built-up area of the settlement area. Some vegetation is present associated with the Lake Huron shoreline on the adjacent property to the west.
- The two short-listed Alternative Solutions BPS areas (described further in **Section 6.2.2**) consist of a municipal park at Riggin Park with cut lawns and individual trees, as well as the stormwater management pond site at Stoney Island Crescent with cut lawns and a wooded area towards the rear of the property indicated on municipal OP mapping.
- The watermain extension area (north of Bruce Road 23/Albert Road) includes a County right of way.

Study area mapping provided in **Figure 3** in this report shows the location of natural areas.

4.3.3 WILDLIFE AND WILDLIFE HABITAT

Candidate significant wildlife habitat (SWH) features are defined in the MNRF *Significant Wildlife Habitat Technical Guide* (2000) and MNRF Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E (2015). The Significant Wildlife Habitat Technical Guide organizes SWH into four categories:

- Habitats of Seasonal Concentrations of Animals,
- Rare Vegetation Communities or Specialized Habitats for Wildlife,
- Habitats of Species of Conservation Concern, and
- Animal Movement Corridors.

The Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E provide descriptions of wildlife habitats and guidance on criteria for determining the presence of candidate and confirmed wildlife habitats. Targeted wildlife surveys are typically required to confirm habitat use and significance.

A full SWH assessment was not completed as part of this natural heritage assessment; however, there was a Deer Wintering Area identified by MNRF in the Study Area on the north side of Concession 2 near the Bruce Power site.

4.3.3.1 Terrestrial Species at Risk and Species of Conservation Concern

SAR were defined as species that are listed as Endangered or Threatened on the "Species at Risk in Ontario List". SOCC are defined as species that are classified as Special Concern provincially or federally or ranked as S1-S3 in the Ministry of Natural Resources and Forestry's (MNRF) Natural Heritage Information Centre (NHIC) database.

The study area for this project covered a wide area with a diverse range of habitats. There were 24 records of terrestrial SAR (18 birds, 4 mammals, and 2 plants) and 18 records of terrestrial SOCC (2 insects, 5 herptiles, 10 birds, and 1 plant) that overlapped with the study area.

This review was based on background sources identified in the Natural Heritage Study, although their presence or absence would need to be confirmed through future fieldwork at the site once the project footprint size and configuration is confirmed.

Table 7 provides the results of the background review:

Table 7: Background Review Records of Potential Terrestrial SAR to occur in the Study Area

Species	Provincial S-Rank	Ontario ESA	Federal SARA (Schedule 1)
Birds (18)			
Bank Swallow (Riparia riparia)	S4B	Threatened	Threatened
Bobolink (Dolichonyx oryzivorus)	S4B	Threatened	Threatened
Canada Warbler (Cardellina canadensis)	S4B	Special Concern	Threatened
Cerulean Warbler (Setophaga cerulea)	S3B	Threatened	Endangered
Chimney Swift (Chaetura pelagica)	SB4, S4N	Threatened	Threatened
Common Nighthawk (Chordeiles minor)	SB4	Special Concern	Threatened
Eastern Meadowlark (Sturnella magna)	S4B	Threatened	Threatened
Eastern Whip-poor-will (Antostromus vociferus)	SB4	Threatened	Threatened
Golden-winged Warbler (Vermivora chrysoptera)	S4B	Special Concern	Threatened
Henslow's Sparrow (Ammodramus henslowii)	S4B	Endangered	Endangered
King Rail (Rallus elegans)	S2N	Endangered	Endangered
Least Bittern (Ixobrychus exilis)	S4B	Threatened	Threatened
Loggerhead Shrike (Lanius ludovicianus)	S2B	Endangered	Endangered
Louisiana Waterthrush (Parkesia motacilla)	S3B	Threatened	Threatened
Olive-sided Flycatcher (Contopus borealis)	S4B	Special Concern	Threatened
Prothonotary Warbler	S1	Endangered	Endangered

Species	Provincial S-Rank	Ontario ESA	Federal SARA (Schedule 1)
Red-headed Woodpecker (Melanerpes erythrocephalus)	S4B	Endangered	Endangered
Wood Thrush (Hylocichla mustelina)	S4B	Special Concern	Threatened
Mammals (4)			
Small-footed Myotis (Myotis leibii)	S2, S3	Endangered	No Status, No Schedule
Little Brown Myotis (Myotis lucifugus)	S4	Endangered	Endangered
Northern Myotis (Myotis septentrionalis)	S3	Endangered	Endangered
Tri-colored Bat (Perimyotis subflavus)	S3?	Endangered	Endangered
Plants (2)			
Butternut (Juglans cinerea)	S2?	Endangered	Endangered
Pitcher's Thistle (Cirsium 45riangu)	S2	Threatened	Special Concern

Table 8: Background Review Records of Potential Terrestrial SOCC to occur in the Study Area

Species	Provincial S-Rank	Ontario ESA	Federal SARA (Schedule 1)
Insects (2)			
Monarch (Danaus plexippus)	SB4, S2N	Special Concern	Special Concern
Yellow-banded Bumble Bee (Bombus terricola)	S3, S5	Special Concern	Special Concern
Herptiles (5)			
Eastern Milksnake (Lampropeltis 45riangulum)	S3	No Status	Special Concern
Eastern Ribbonsnake (Thamnophis sauritus)	S3	Special Concern	Special Concern

Species	Provincial S-Rank	Ontario ESA	Federal SARA (Schedule 1)
Midland Painted Turtle (Chrysemys picta marginata)	S5	Special Concern	Special Concern
Snapping Turtle (Chelydra serpentina)	S3	Special Concern	Special Concern
Western Chorus Frog (Pseudacris triseriata)	S3	No Status	Threatened
Birds (9)			
Bald Eagle (Haliaeetus leucocephalus)	S4B, S2N	Special Concern	No Schedule, No Status
Barn Swallow (Hirundo rustica)	S4B?	Special Concern	Threatened
Black Tern (Chilidonias niger)	S3B	Special Concern	No Schedule, No Status
Eastern Wood-pewee (Contopus virens)	S4B	Special Concern	Special Concern
Evening Grosbeak (Coccothraustes vespertinus)	S4B	Special Concern	Special Concern
Grasshopper Sparrow (Ammodramus savannarum)	S4B	Special Concern	Special Concern
Great Egret (Ardea alba)	S2B, S3M	No Status	No Schedule, No Status
Peregrine Falcon (Falco peregrinus)	S3B	Special Concern	Special Concern
Rusty Blackbird (Euphagus carolinus)	S4B, S3N	Special Concern	Special Concern
Short-eared Owl (Asio flammeus)	S2N, S4B	Special Concern	Special Concern
Plants (1)			
Dwarf Lake Iris (Iris lacustris)	S3	Special Concern	Special Concern

Aquatic SAR is considered in **Section 4.3.4**.

The tables above are based on the background records review information only, and do not indicate occurrence of these species within the study area. Based on the existing conditions of the study area, the proposed work has the potential to impact:

Terrestrial SAR:

- Butternut: may occur in woodlands and hedgerows and other open natural habitats
- Pitcher's Thistle: may occur in sandy habitats along the Lake Huron shoreline
- Bat SAR: may use woodlands, hedgerows, and other open as maternity roosts where large trees are present, or structures and buildings along side the ROW for maternity roosting
- Migratory Birds protected under the SARA:
    - Bank Swallow may nest in exposed soils associated with soil piles and eroding banks along the Lake Huron shoreline
    - Bobolink, Eastern Meadowlark, and Henslow's Sparrow may nest in hay fields, meadows and pastures
    - Canada Warbler, Cerulean Warbler, Red-headed Woodpecker, Wood Thrush, and Goldenwinged Warbler may nest in woodlands and/or forest edge habitat
    - Chimney Swift may occur in buildings, predominately in Kincardine, but also scattered across the Study Area
    - Common Nighthawks may nest in sparse meadows and pastures
    - Eastern Whip-poor-will may nest in semi-open woodlands
    - Louisiana Waterthrush, Olive-sided Flycatcher, and Prothonotary Warbler may nest in or near unnamed wetlands, Lorne Beach Swamp and/or the creeks and rivers (i.e., Andrews Creek, Lorne Creek, Tiverton Creek, Little Sauble River)
    - Loggerheaded Shrike may nest in hedgerows and forested area adjacent to hayfields, meadows and pastures

Terrestrial SOCC

- Dwarf Lake Iris: may occur in rocky shorelines, sand or gravel beach ridges, and in openings in coniferous woodlands and other open habitats

- Monarch: may breed in meadows and roadsides containing common milkweed
- Yellow-banded Bumble Bee: may occur in a variety of habitats, particularly meadow, urban parks and other open habitat
- Eastern Milksnake: may occur in a variety of habitats, especially adjacent to old foundations and barns
- Eastern Ribbonsnake: may occur along the edges of Lorne Beach Swamp, the unnamed wetlands, and along the creeks (i.e., Andrews Creek, Lorne Creek, Tiverton Creek, Little Sauble River)
- Midland Painted Turtles and Snapping Turtle: may occur in permanent and temporary ponds and drainage features, and may nest in open gravelly soils adjacent to these features
- Western Chorus Frog: may breed in seasonal pooling areas
- Birds protected under the MBCA:
    - Barn Swallow may nest in various structures and buildings
    - Eastern Wood-Pewee, and Evening Grosbeak may nest in woodlands
    - Grasshopper Sparrow may nest in meadows, hay fields and pastures
    - Great Egret may nest in the unnamed wetland and Lorne Beach Swamp
    - Birds protected under the FWCA:
    - Bald Eagle may nest in woodlands adjacent to Lake Huron
    - Short-eared Owl may nest meadows, pastures, and agricultural fields
    - Rusty Blackbird may nest in the forested wetland, and Lorne Beach Swamp

Species-specific environmental investigations will be conducted to consider whether any of these species are present in potential work areas.

4.3.4 FISH AND FISH HABITAT

A Fisheries background review was conducted for the study area. Available background data was consulted. All waterbodies (i.e., wetlands, rivers, and creeks) including 30 m on either side are regulated by SVCA.

Lake Huron is located adjacent to the Kincardine WTP on Durham Street. The study area also includes four watercourses where fish habitat may occur: Little Sauble River, Tiverton Creek, Andrews Creek, and Lorne Creek.

Little Sauble River and Tiverton Creek have cold-water thermal regimes (in-water works are restricted by MNRF from October 1 to May 31). No thermal regimes are known for Andrews Creek and Lorne Creek. Thermal regimes are recommended to be confirmed with MNRF (Midhurst District) and/or the SVCA.

Fish survey point data for the study area did not have SAR or SOCC species recorded. No fish community data was available from the LIO database.

4.3.4.1 Fish and Fish Habitat SAR and SOCC

One Aquatic SAR species, Shortnose Cisco, is provincially and federally ranked as Endangered (S5) within Lake Huron up to the shoreline. Their habitat includes the entirety of Lake Huron No in-water work is required within Lake Huron for this project. No SOCC background review records were identified.

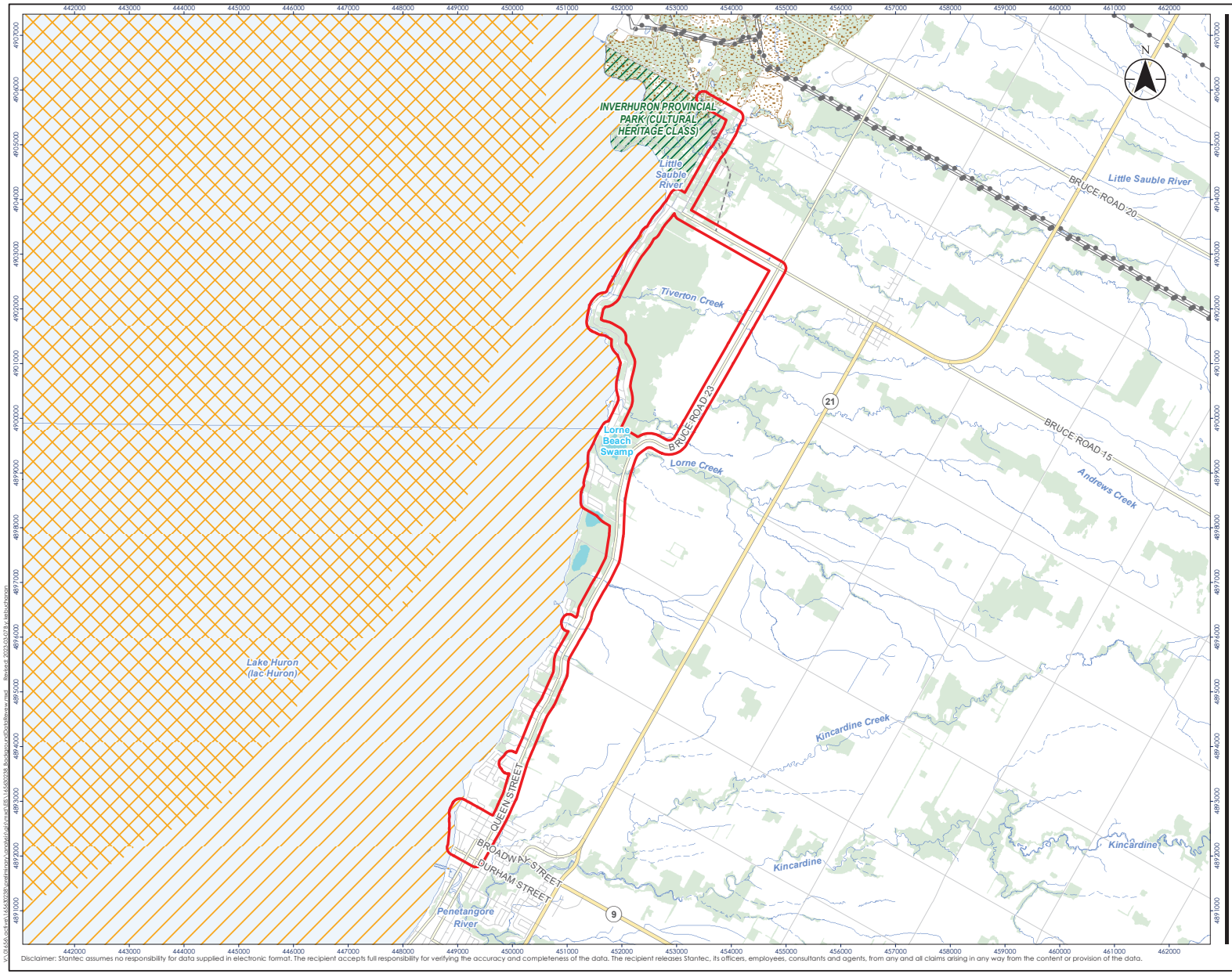
4.3.5 NATURAL ENVIRONMENT FEATURES SUMMARY

The following Natural Heritage features are present within the study area based on the background review of natural heritage information:

- Two Evaluated non-Provincially Significant Wetlands (PSW): Lorne Beach Swamp and an Unnamed wetland
- Unevaluated wetlands
- Woodland areas associated with the two non-PSWs
- Significant woodland areas
- Significant Wildlife Habitat: deer wintering area
- Waterbodies: Lake Huron
- Watercourses/Fish habitat (as occurring north to south of the Study Area):
    - Little Sauble River (cold-water thermal regime)
    - Tiverton Creek (cold-water thermal regime)
    - Andrews Creek (unknown thermal regime)
    - Lorne Creek (unknown thermal regime)

- Inverhuron Provincial Park
- SVCA Regulation Limits associated with wetlands, watercourses, Stoney Island Conservation Area, and Lake Huron Shoreline

A map showing the natural features in the study area is included in **Figure 3**.



Stantec

Legend

- Study Area (Potential Routes + 120 metre Setback)
- Deer Wintering Area
- Provincial Park
- Wetland, Other Evaluated
- Waterbody
- Wooded Area

Aquatic SAR Distribution

- Deepwater Sculpin - Special Concern
- Shortnose Cisco - Endangered
- Hydro Line
- Unknown Transmission Line
- Watercourse (Intermittent)
- Watercourse (Permanent)

0 1 2 3 4 km

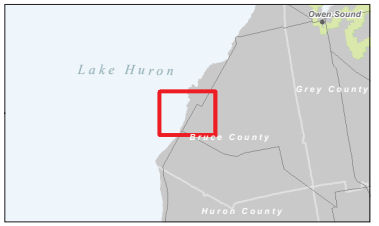
1:70,000 (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2019.

Niagara Escarpment Plan

Greenbelt Natural Heritage System



Project Location
Municipality of Kincardine

165630238 REV4
Prepared by KDB on 2023-03-07

Client/Project
MUNICIPALITY OF KINCARDINE
WATER SYSTEM EXPANSION
MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT

Figure No.
3

Title
Natural Heritage - Overview

4.3.6 SOURCEWATER PROTECTION

In accordance with Ontario's *Clean Water Act* (*CWA*), Bruce County has enacted policies through the Drinking Water Source Protection Program that is guided by the *Clean Water Act, 2006*. The Municipality of Kincardine is located within the "Saugeen, Grey Sauble, Northern Bruce Peninsula Source Protection Region" to protect groundwater sources. Source Protection Plan (SPP) policies work to reduce risk by regulating proposed and existing activities which have been identified as posing significant threats to drinking water safety. Depending on the hydrology and geology of an area, as well as potential risks posed by activities onsite, different policies under the SPP may apply to the Study Area.

Sourcewater Protection Mapping was reviewed from the following sources to identify the presence of Intake Protection Zones (IPZ), Highly Vulnerable Aquifers (HVA), and Significant Groundwater Recharge Areas (SGRA) within the study area:

- SVCA Online Interactive Mapping and
- Bruce County GIS Mapping (BCOP Schedule 3) and Municipality of Kincardine OP (Schedule C1 and Schedule C2) mapping)

Intake Protection Zones (IPZ) are present associated with the water supply pumping station in Kincardine. The area immediately adjacent to the pumping station is IPZ1 along the shoreline and within Lake Huron. IPZ2 includes other areas of the community that are further from the Kincardine WTP. A Highly Vulnerable Aquifer (HVA) is present in the study area along the Lake Huron shoreline, from the Lorne Beach/ Kinhuron Park area to the Bruce Power site.

Two Wellhead Protection Areas (WHPA) are located in Tiverton, one of which is located at a Pumping station near Conquergood Avenue in north Tiverton and the second is at a pumping station near Sara Street. Both have boundaries that extend eastward. Other WHPA are present that either are based in rural communities east of Highway 21 (such as at Armow, Underwood, and Scott's Point), or those based in the Township of Huron-Kinloss where the vulnerability areas cross into the Municipality of Kincardine. These WHPA are not the subject of this study and are not impacted. Other private wells are anticipated to be present in the study area.

Sourcewater Protection mapping is included in **Appendix D.**

4.3.7 CLIMATE CHANGE IN THE ENVIRONMENTAL ASSESSMENT PROCESS

Under clause 31(1)€ of the *Environmental Assessment Act*, the Minister of the Environment, Conservation and Parks may gather, publish and disseminate information with respect to the environment or environmental assessments for the purposes of the

administration and enforcement of the *Environmental Assessment Act* and its regulations.

For this project, water supply infrastructure alternatives are being considered to address the proposed servicing of the Bruce Power site and the growth needs in the Municipality of Kincardine. Water supply for the Kincardine DWS is drawn from Lake Huron rather than local aquifers. If groundwater requirements are identified, the project would seek to make sustainable use of local aquifers to improve climate change resiliency.

Evaluation criteria were included to consider the potential to avoid natural features, such as significant wetlands and woodlands which may act as carbon sinks. Potential to limit or reduce greenhouse gas emissions was also included.

4.4 Cultural Environment

4.4.1 CULTURAL HERITAGE RESOURCES

The requirement to consider cultural heritage resources in Municipal Class EAs is discussed in the MEA document and the PPS. Cultural heritage includes built heritage resources and cultural heritage landscapes, as well as archaeological resources.

Cultural heritage resources that retain heritage attributes should be identified early in the EA process and avoided where possible. Where avoidance is not possible, potential effects to these attributes should be identified and minimized. Adverse impacts should be mitigated according to provincial and municipal guidelines. It is suggested that this happen early in the process so that potential impacts to significant features can be included in understanding project impacts and mitigation plans.

Section 2.6 of the PPS addresses cultural heritage in the land use planning process and was considered. The applicable policies include:

> *2.6–1 - Significant built heritage resources and significant cultural heritage landscapes shall be conserved.*
>
> *2.6–3 - Planning authorities shall not permit development and site alteration on adjacent lands to protected heritage property except where the proposed development and site alteration has been evaluated, and it has been demonstrated that the heritage attributes of the protected heritage property will be conserved.*
>
> (Government of Ontario 2020)

The *Ontario Heritage Act* (OHA) provides the primary statutory framework for the conservation of cultural heritage resources in Ontario (Government of Ontario 2023).

Conservation of cultural heritage resources is a matter of provincial interest, as reflected in the OHA and MCM policies.

Both of the short-listed Alternative Solutions BPS sites at Riggin Park and at Stoney Island Crescent are located in established subdivisions with residential buildings. Given the similar context, for the purposes of the Alternatives Solutions investigation, potential to encounter properties older than 40 years could not be excluded as a possibility for either site.

Further evaluation was completed in the Alternative Design phase in **Section 9.2.2** to consider potential built heritage resources and cultural heritage landscapes in relation to proposed work areas near Stoney Island Crescent and the proposed watermain extension. Cultural Heritage background information is included in **Appendix E2.**

4.4.2 ARCHAEOLOGICAL RESOURCES

A Stage 1 Archaeological Assessment was completed for potential work areas. The Stage 1 archaeological assessment categorized the various potential sites as follows:

- Site A – Riggin Park: Stage 2 archaeological assessment recommended for study area.
- Site B Stoney Island Crescent alternatives:
    - SWM Block: Partially disturbed, no further archaeological assessment was recommended in those areas. Stage 2 archaeological assessment recommended for remainder of the study area.
    - Pumphouse: Previously disturbed, no further archaeological assessment recommended.
    - Bruce Road 23: Majority of the study area identified as previously assessed with no further archaeological assessment recommended or previously disturbed and no further archaeological assessment recommended. A portion of the study area retains archaeological potential and Stage 2 archaeological assessment recommended.
- Site C Kinhuron Road: A portion of the study area is disturbed and no further archaeological assessment was recommended. The remainder of the study area retains archaeological potential and Stage 2 archaeological assessment recommended.
- Site D Stoney Island Conservation Area: The majority of the study area retains archaeological potential and Stage 2 archaeological assessment recommended.

A portion of the study area is steeply sloped and no further archaeological assessment recommended.

- Site E 4 Parkwood Road: Previously disturbed, no further archaeological assessment recommended.
- Albert Rd-Con Rd 2 Extension: A portion of the Albert Road right-of-way retains archaeological potential and Stage 2 archaeological assessment recommended. The remainder of the study area is previously disturbed, no further archaeological assessment recommended.

A map of these parcels is included in **Figure 4.** The Stage 1 report is included in **Appendix E3.** Refer to **Section 9.2.1** for recommendations as they pertain to the Alternative Design concept.

5 Problem and Opportunity Statement

Phase 1 of the MCEA requires the identification of a Problem and Opportunity Statement. Based on the existing and future conditions related to the study area, the following problems were identified:

- *The Municipality of Kincardine is experiencing community growth and is considering the potential to add Bruce Power as a water customer by providing potable water to the site.*
- *The municipality is undertaking this Municipal Class EA to build on the previous 2018 Water and Wastewater Treatment Master Plan, 2021 Kincardine Water Treatment Plant capacity analysis, and 2023 Master Plan Update to identify preferred alternatives for upgrades at the Kincardine Water Treatment Plant and distribution system.*
- *A preferred alternative will be identified to address current and future water treatment and supply needs, the ability to boost required water flows where needed, and to enable future system expansion. A preferred solution will be identified that will seek to avoid significant adverse impacts on the natural, social, and cultural environments.*

The Problem and Opportunity Statement was presented as part of PIC 1. Alternative Solutions (Phase 2 of the MCEA) were developed to meet the requirements of this statement.

6 Alternative Solutions

6.1 Review of Previously Developed Alternative Solutions

The Kincardine *Water and Wastewater Servicing Master Plan* (2018) included detailed community growth forecasting scenarios. The Master Plan completed Phases 1 and 2 of the MCEA process and concluded that additional water supply infrastructure would be required as early as 2032, depending on actual community growth. Water servicing requirements for the Bruce Power site were also reviewed at that time.

To address future water servicing needs, three alternative solutions were developed as part of Phase 2 of the EA study process and were assessed in the Master Plan:

- A new WTP at the north end of the municipality;
- Expansion of the existing Kincardine WTP; and
- Do nothing.

The Master Plan concluded that a new WTP at the north end of the municipality was the preferred alternative for providing future capacity for Kincardine and addressing the water servicing requirements of the Bruce Power site. It was further concluded that if a new WTP was not pursued, the municipality should re-evaluate expansion options of the existing WTP in the future.

Following the completion of the Master Plan process in 2018, a Comprehensive Performance Evaluation (CPE) (Stantec, 2021) was completed to further evaluate WTP expansion options for the existing Kincardine WTP, including potential facility upgrades to increase treatment capacity. The CPE concluded that there may be potential to expand the existing WTP to provide sufficient treatment capacity, depending on the rate of community growth. Other infrastructure, such as water storage and booster station(s), may also be required depending on the extent of expansion being considered.

The Municipality confirmed in 2021 that it will not pursue a new WTP in the north end at this time and commenced a Schedule C EA study in 2022 to consider alternatives to provide water treatment capacity via expansion of the existing WTP facility including potential connection to the Bruce Power site. The alternative “new WTP at the north-end” was therefore not carried forward for evaluation or considered further.

Alternative Solutions carried forward from the Master Plan process include the “Do Nothing” alternative (for comparison purposes) and “Expansion of the Existing Kincardine WTP”. Additional Alternative Solutions were reviewed during the EA study including:

- **Limit Community Growth:** This alternative involves limiting residential growth through municipal policy in the community and is typically considered when evaluating options for municipal infrastructure. Under this Alternative, no new water supply or treatment capacity would be required, and therefore no improvements would be proposed for water system expansion.
- **Expansion of the existing Kincardine WTP with a Larger Site:** This alternative involves addressing water supply and treatment capacity needs through technological or process changes at the existing site and would also include pursuing additional property on which to build upgraded process equipment.

6.2 Identification of Alternative Solutions

6.2.1 KINCARDINE WTP

The Alternative Solutions were screened based on their ability to address the Problem and Opportunity Statement and updated growth requirements of the municipality, provided as part of the current Kincardine *Water and Wastewater Servicing Master Plan Update*. **Table 9** provides a summary of the Alternative Solutions Screening for the Kincardine WTP.

Table 9: Summary of Alternative Solutions Screening: Kincardine WTP

Alternative Solutions	Description	Result
Do Nothing (comparison only for EA)	• Approach is to maintain current water treatment capacity at the Kincardine WTP without adjusting community growth projections. • Will result in a conflict between required and available water production demand.	Does not address the Problem/Opportunity Statement, since this will approach limit planned community growth. **Carry forward for comparison purposes.**
Limit Community Growth (NEW)	• Approach is to maintain current water treatment capacity at the Kincardine WTP and limit community growth to available production. • Does not support further growth in the Municipality and surrounding area, as identified in the Official Plan.	Does not address the Problem/Opportunity Statement, since this approach limits planned community growth and does not support a watermain extension to the north.

Alternative Solutions	Description	Result
	• Does not address the problem statement. This alternative does not provide the required additional treatment capacity or the ability to supply Bruce Power site.	**Do not carry forward for further consideration.**
Expansion of the Kincardine WTP within the existing building and site footprint	• Approach is to conduct upgrades to the processes at the WTP that can be completed within the existing facility footprint to provide increased production capacity. • The feasibility of this approach is supported by the findings of the evaluation in the 2021 CPE which indicated there is potential to expand the existing WTP capacity to meet projected demands to 2043 and potentially beyond, depending on the rate of community growth and phasing of the upgrades. • This alternative would not require any property acquisition.	Has the potential to respond to the Problem/Opportunity Statement to provide the desired capacity at the existing WTP site but requires further assessment of process alternatives. **Carry Forward for further evaluation**
Expansion of the Kincardine WTP, including an expansion of the building and site footprint	• Approach is to add new process units to provide increased production capacity at the existing WTP through expansion of the building envelope. • There is minimal land available near the existing Kincardine WTP and options for physical expansion of the facility is limited. • The WTP is located in a residential neighbourhood and building/site expansion is therefore not desirable. Surplus municipal land is not available and required property acquisition may be costly.	The existing site constraints may be considerable, and options exist to increase the WTP capacity without acquiring additional land. **Do not carry forward for further consideration.**

The review of Alternative Solutions confirms that “Expansion of the Existing Kincardine WTP on the Existing Site” is preferred and will be carried forward into the development of Alternative Designs. This Alternative confirms, and is in keeping with, the

recommendation of the 2018 Master Plan to consider improvement options at the existing Kincardine WTP if a new WTP at a new site is not pursued.

Further analysis was considered to determine the appropriate capacity and treatment requirements as part of the Alternative Design process.

6.2.2 WATERMAIN AND BOOSTER PUMPING STATIONS

In accordance with the Municipal Class EA document (section C.2.1.3), various alternative solutions were considered for an expansion or upgrade at the existing water system, including limiting community growth, improvements at the existing system site, or establishing a new water system (new WTP).

The 2018 Master Plan identified that, if the Municipality were to consider a future connection to the Bruce Power site, the Municipality would likely require a new WTP in the north part of Kincardine. As such, the original preferred solution would be to connect the systems when the WTP is built. At the time of the 2018 Master Plan, this connection was not yet warranted, and the existing system was sufficient for growth.

Following the Master Plan, the Municipality opted to not continue to consider a new WTP facility site, as described in **Section 6.1**. Improving the existing water system to include BPS(s) was the remaining technical solution to utilize the existing Kincardine WTP water source while providing supply to the Bruce Power site without impact to existing customers.

A BPS is required for the proposed extension to service the Bruce Power site due to the presence of hydraulic elevation changes between the existing Kincardine WTP and the site and as a result of pipe losses due to friction. Hydraulic modeling was undertaken to confirm the need for a BPS as well as to refine the area where a BPS facility could be sited without negatively impacting water pressures upstream and downstream of the facility. A brief description of the modeling results is presented in **Section 4.1.4** and a copy of the report is included in **Appendix F**.

A review of municipal properties along the route was conducted to determine if available municipal land could support a BPS. The site alternatives are described below:

- **Alternative 1: Site A – Riggin Park:** This site consists of a municipal park, located along Inverlyn Crescent North. The park includes cut lawns and individual trees within its boundaries. The site is located adjacent to an easement for the Blue Trail. A BPS would be anticipated to be located at the back of the site (north), but access would need to be further considered.
- **Alternative 2: Site B – Stoney Island Crescent, stormwater management SWM Block:** This site is located on Stoney Island Crescent, located to the west of Bruce Road 23. The road provides access to a subdivision near Lake Huron.

There is an existing Stormwater Management Facility on the property, and it is surrounded by low density but large homes. A woodlot is located to the rear of the property, while open space is along the lot frontage.

- **Alternative 3: Site C – Kinhuron Road:** this site is located to the north of Kinhuron Road and features an open grassed area. The road provides access to North Cedar Lane and South Cedar Lane with access to Lake Ontario beyond.
- **Alternative 4: Site D – Stoney Island Conservation Area:** A property on the Stoney Island Conservation Area was identified as it is located along Bruce Road 23 rather than a side road for comparison purposes.
- **Alternative 5: Site E – 4 Parkwood Road (at Bruce Road 23):** This site includes a Bruce Telecom building and previously included a well house which has since been removed.

The location of the municipal properties is included on a map as **Figure 4**.

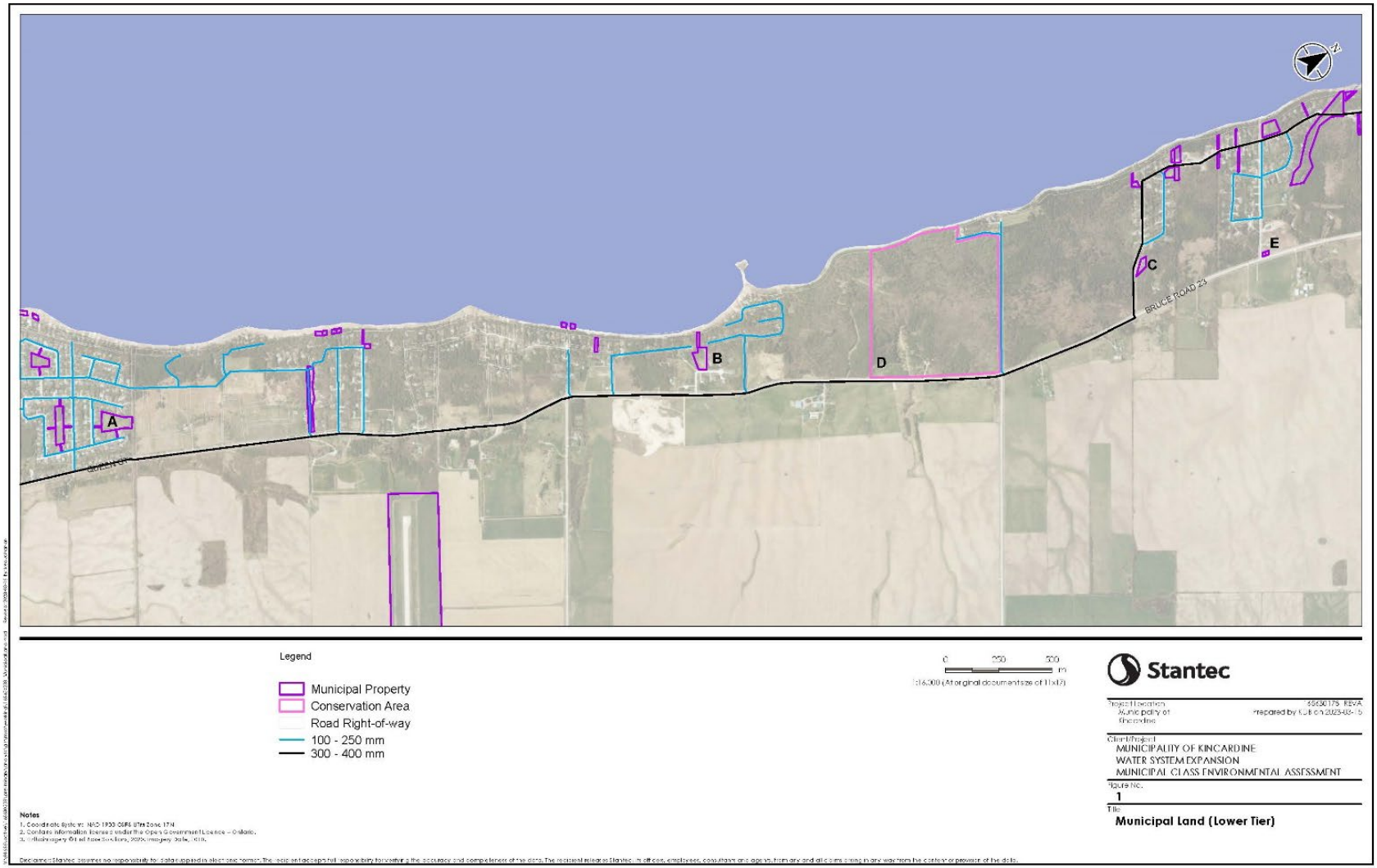


Figure 4: Municipal Land Identifying Booster Pumping Station Locations Evaluated

6.3 Preliminary Screening of the Long List of Alternative Solutions: Kincardine Watermain and Booster Pumping Stations

A long list of potential alternative solutions was screened based on their ability to address the Problem and Opportunity Statement.

A critical consideration for placement of a BPS is the ability to maintain appropriate pressure upstream and downstream of the BPS, given the elevation changes in the system. This key differentiator made sites closer to the Kincardine WTP such as Riggin Park and Stoney Island Crescent more favourable from a technical perspective. Other sites (Sites C-E) did not have the same technical advantages and were screened out. These sites have space challenges that may require them to be widened to accommodate a BPS and were therefore also excluded.

Table 10 provides a summary of preliminary screening and recommendation on whether the alternative solution should be carried forward for further evaluation.

Table 10: Preliminary Screening of BPS Location Alternatives

Location Alternative	Preliminary Screening Description	Carried Forward for Detailed Evaluation?
Site A – Riggin Park	• Sufficient land available to construct new BPS and road/trail allowance (Blue Trail) which may provide a means for access for new watermain infrastructure. • Preliminary modeling suggests that location could work within upstream and downstream pressure boundaries due to its location.	**Carried forward**
Site B – Stoney Island Crescent, SWM Block	• Sufficient land available to construct new BPS. Near a road allowance (Stoney Island Crescent) which provides a means for access and new watermain infrastructure. • Preliminary modeling suggests that location could work within upstream and downstream pressure boundaries.	**Carried forward**
Site C Kinhuron Road	• Site size is limited and close to roadway and on steeper slope. The site may need to be widened to accommodate a new BPS and site works.	Not carried forward due to site constraints and hydraulic impacts

Location Alternative	Preliminary Screening Description	Carried Forward for Detailed Evaluation?
	• Preliminary modeling suggests noticeable impact to upstream pressures in the distribution system and reduction in level of service to those customers.	within the upstream distribution system.
Site D – Stoney Island Conservation Area	• Site size is limited and close to roadway and on steeper slope. The site may need to be widened to accommodate a new BPS and site works. The property is less desirable as it is within a Conservation Area. Removal of conservation lands is not preferred. • Preliminary modeling suggests noticeable impact to upstream pressures in the distribution system and reduction in level of service to those customers.	Not carried forward due to site constraints and hydraulic impacts within the upstream distribution system.
Site E – 4 Parkwood Road	• Site size is limited and close to roadway and on steeper slope. The site may need to be widened to accommodate a new BPS and site works. • Preliminary modeling suggests noticeable impact to upstream pressures in the distribution system and reduction in level of service to those customers.	Not carried forward due to site constraints and hydraulic impacts within the upstream distribution system.

The evaluation identified that Site A – Riggin Park and Site B – Stoney Island Crescent, SWM Block were carried forward for detailed evaluation.

6.4 Evaluation Methodology

As part of Phase 2 of the Class EA process, the framework and criteria for assessing Alternative Solutions are identified to determine the advantages and disadvantages with respect to the natural, social, cultural, technical and financial categories. **Table 11** shows the evaluation ratings used for this project.

Table 11: Evaluation Ratings

Category	Rating/Description
Least Preferred	The alternative was the least preferred among the alternatives assessed
Moderately Preferred	The alternative was moderately preferred, and had some attributes that allowed it to be rated above another alternative
Most Preferred	The alternative was rated the highest of the alternatives, and was most preferred for its category

A qualitative assessment was used for this project where each category was assessed based on how it was preferred in relation to the other alternatives presented.

Table 12 provides the Assessment of Alternatives for the BPS locations which enable future expansion of the existing watermain on Bruce Road 23. For the detailed evaluation table and categories, refer to Technical Memorandum #1 in **Appendix E**.

Table 12: Assessment of Alternatives for the BPS Locations

CRITERIA	Site A: Booster Pumping Station at Riggin Park	Site B: Booster Pumping Station near Stoney Island Crescent – Concept shown at Stormwater Management Pond Lands
Social Environment	Moderately Preferred	Most Preferred
Cultural Environment	Moderately Preferred – no difference.	Moderately Preferred – no difference.
Natural Environment	Moderately Preferred – no difference.	Moderately Preferred – no difference. – no difference.
Technical Environment	Moderately Preferred	Most Preferred
Financial Environment	Moderately Preferred	Most Preferred
OVERALL	**Moderately Preferred**	**Most Preferred** 

A BPS site in the area of Stoney Island Crescent was determined to be the preliminary preferred site for the BPS for the following reasons:

- Best addresses technical requirements.
- Lower total project costs.
- Mitigates the need for pressure zone chambers along additional roadways or disruption along Blue Trail.
- No difference for the Natural Environment category based on screening: Both are on maintained public open space with nearby trees and watercourses. Ability to avoid sensitive environmental features; water crossings required for the watermain route are assumed to be completed by means of trenchless methods to mitigate impacts.
- No difference for Cultural Environment based on screening: Same potential to encounter structures over 40 years or other heritage properties.

- Can be sized and operated to best manage pressure impacts on the upstream and downstream system.

6.5 Watermain Extension

Through the hydraulic analysis, it was identified that the existing 300 mm diameter watermain extending north from the Kincardine WTP to the lakeshore communities near Inverhuron could accommodate flows to service the Bruce Power site if extended to the site boundary and assuming operation of a new BPS.

This preliminary Preferred Solution included a conceptual extension on Albert Road from Alma Street to Concession 2, extending northwest to Tie Road and Concession Road 2 (near the Bruce Power site property line). The proposed watermain will be located within the existing municipal right-of-way.

This approach makes efficient use of existing infrastructure, significantly reduces natural environment impacts except for the watermain extension, reduces the area of construction-related impacts (such as traffic, noise, and dust), and provides a technical solution. Other potential connections would add increased length and technical complexity, as well as increased potential for impacts to the natural environment.

This conceptual route was presented at PIC 1 with the remaining evaluations, as shown in **Figure 5**.

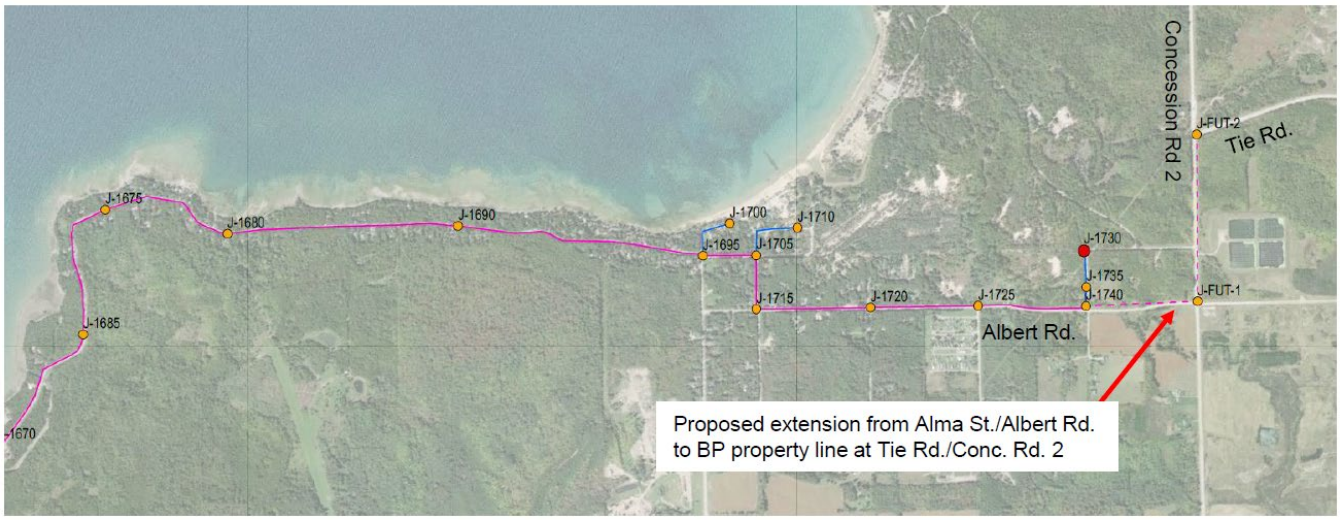


Figure 5: Proposed Watermain Extension to Service Bruce Power Site

6.6 Preferred Alternative

Based on evaluation of Alternative Solutions, the preferred solution was identified as follows:

- The expansion of the Kincardine WTP within the existing building and site footprint best provides added treatment capacity, while minimizing impacts to the social, cultural, and natural environments.
- A new booster pump station (BPS) to be constructed in the general area of Stoney Island Crescent. The BPS will interconnect to the existing watermain on Bruce Road 23.
- A short watermain extension to the Bruce Power site will be required along Albert Road, from Alma Street to Concession Road 2 and west along Concession Road 2 to Tie Road terminating at the property line to the Bruce Power site.

A BPS in the general area of Stoney Island Crescent was preferred for technical reasons as it better fulfills the hydraulic requirements, notably the ability to provide pressure boosting with minimal upstream and downstream impacts when compared to baseline conditions and other BPS locations considered. A site at Stoney Island Crescent within the existing SWM block was originally identified at the time of PIC 1 as the proposed site given that the lands are already owned by the Municipality.

Riggin Park was screened out from further consideration due to concerns raised about access to the site via the trail system, impacts to local road users and its more limited technical constructability and hydraulic impacts compared to the area around Stoney Island Crescent.

Comments following PIC 1 in **Section 3.5.2** identified some localized flooding that previously occurred at the SWM pond site, as well as concerns about loss of areas zoned as Open Space. Both Riggin Park and Stoney Island Crescent would have a similar loss of Open Space required to accommodate the BPS due to its anticipated footprint. Localized flooding and land use were considered further in the next phase of the project when assessing the viability of the SWM block as part of the Alternative Designs phase (Phase 3).

The Preferred Alternative of the BPS near Stoney Island Crescent was carried forward to the Alternative Designs phase with the intention of reviewing the available land in and around Stoney Island Crescent, and to further consider opportunities to optimize the site placement based on the feedback received.

6.7 Confirmation of the Municipal Class Environmental Assessment Schedule

The Municipal Class EA document (2000, as amended 2007, 2011, and 2015) identifies that water projects that “establish, extend or enlarge a water distribution system and all works necessary to connect the system to an existing system or water source, where such facilities are not in either an existing road allowance or an existing utility corridor” are classified as Schedule B projects. However, a Schedule C project is required when

a project will: “Construct a new water treatment plant or expand existing water treatment plant beyond existing rated capacity.”

Water treatment capacity per the preferred solution will seek to increase capacity from its existing net capacity of 10,696 m³/day (rated gross capacity of 11,563 m³/day) to a net capacity upgrade of 15,500 m³/day excluding in-plant water use. Process changes to meet this capacity increase are described as part of the Alternative Designs evaluation in subsequent sections. Therefore, a Schedule C project (Phases 1-4) is confirmed as the appropriate Schedule to follow.

7 Alternative Designs

Alternative Designs are developed as part of Phase 3 of the Municipal Class EA process to describe the methods of implementing the following preferred Alternative Solutions. For this project, the alternative design evaluation considered two major items:

- Expansion of the existing Kincardine WTP on the existing site; and
- New BPS in the general area of Stoney Island Crescent.

The following section provides the description and evaluation of the Alternatives carried forward into Phase 3 of the EA process.

7.1 Kincardine WTP Processes

Kincardine WTP process Alternative Designs were developed to address the existing system supply constraints at the Kincardine WTP. Identifying these Alternative Design concepts was important to ensure that sufficient water supply treatment capacity is available or can be obtained to service Kincardine and the Bruce Power site needs before considering the possibility of a system extension.

The following Alternative Designs were considered for evaluation:

- **Alternative 1: Maintain Chlorine Disinfection Only –** This alternative involves maintaining the existing gas chlorination system for primary and secondary disinfection at the Kincardine WTP. To meet projected capacity and disinfection requirements, it is anticipated that a higher minimum chlorine residual would need to be maintained than the current concentration. Specifically, it is estimated that the minimum chlorine residual would need to be increased from approximately 0.95 mg/L to 1.1 mg/L or higher. Additionally, this alternative does not make any additional existing on-site storage tank volume available for system storage which may result in the need for an increase in off-site water storage system and possibly an additional booster station which would be associated with land acquisition and maintenance of a new property and asset for the Municipality. In addition, this alternative would include upgrades to the low-lift pumping capacity, re-rating of the high-rate sedimentation process, and bringing the Filter 5 basin on-line for increased filtration capacity.
- **Alternative 2: Upgrade Disinfection with Ultraviolet Light (UV) –** This alternative involves upgrading the existing gas chlorination primary disinfection system with UV disinfection and maintaining the existing gas chlorination system for a portion of the primary disinfection and for secondary disinfection. This alternative improves the multiple-barrier disinfection processes for pathogens at

Kincardine WTP and would make additional on-site storage reservoir capacity available for system storage. Based on preliminary assessment, approximately 3,000 m^3 of system storage would be available for equalization within the WTP on-site reservoir[2]; therefore, this alternative is not expected to require additional off-site storage or additional land acquisition (specifically for storage) to provide supply to the Bruce Power site as the additional storage gained would offset the added storage needs to service the site. Like Alternative 1, this alternative would include upgrades to the low-lift pumping capacity, re-rating of the high-rate sedimentation process, and bringing the Filter 5 basin on-line for increased filtration capacity.

Conceptual Drawings are provided for the two design options in the following **Figure 6 to Figure 9**. It should be noted that additional analysis for the preferred design solution may result in modifications to the facility layout.

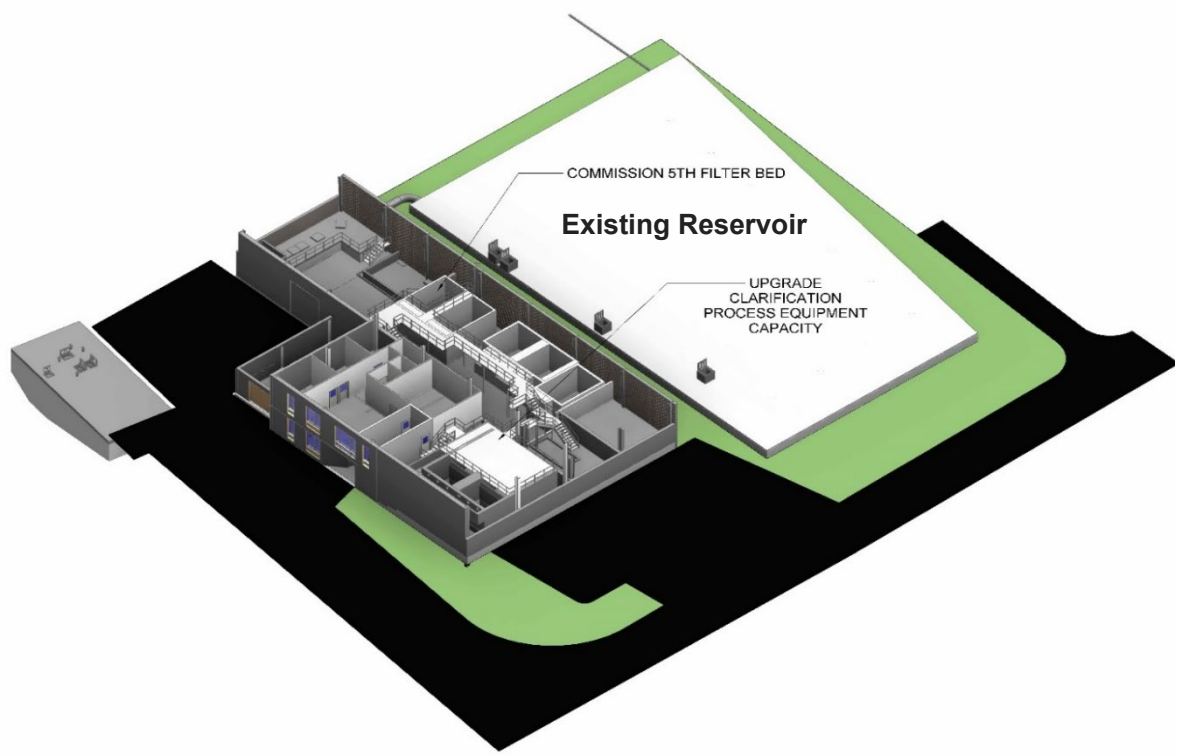


Figure 6: Kincardine WTP Alternative Design 1 - Upgrade with No UV Disinfection

[2] 3,000m^3 is based on minimum water level elevation of 178.55.2m and top water elevation of 181.25m. Actual equalization volume may be further impacted by minimum level requirements for pump operation.

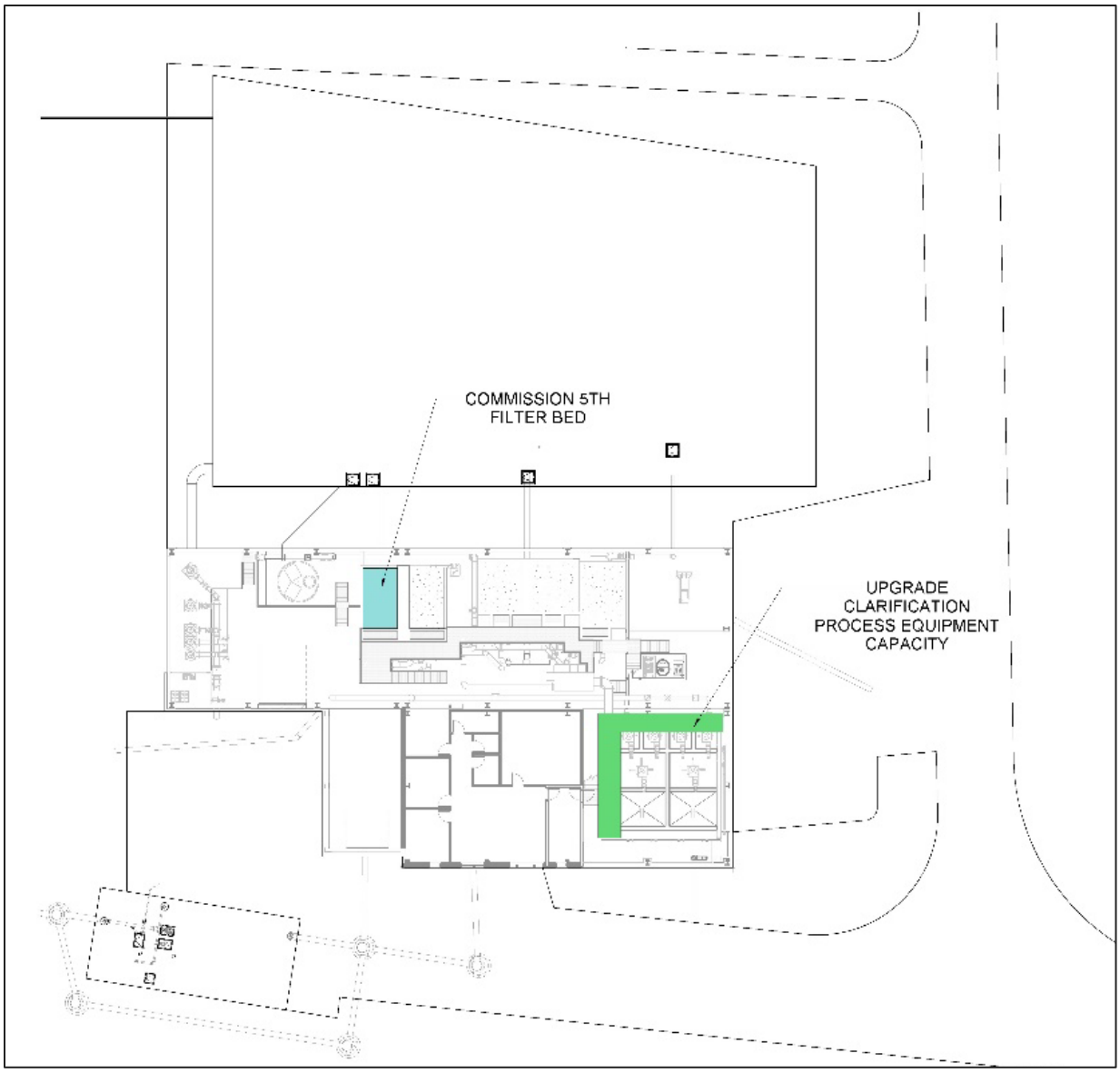


Figure 7: Kincardine WTP Alternative Design 1 - Upgrade with No UV Disinfection - Plan View

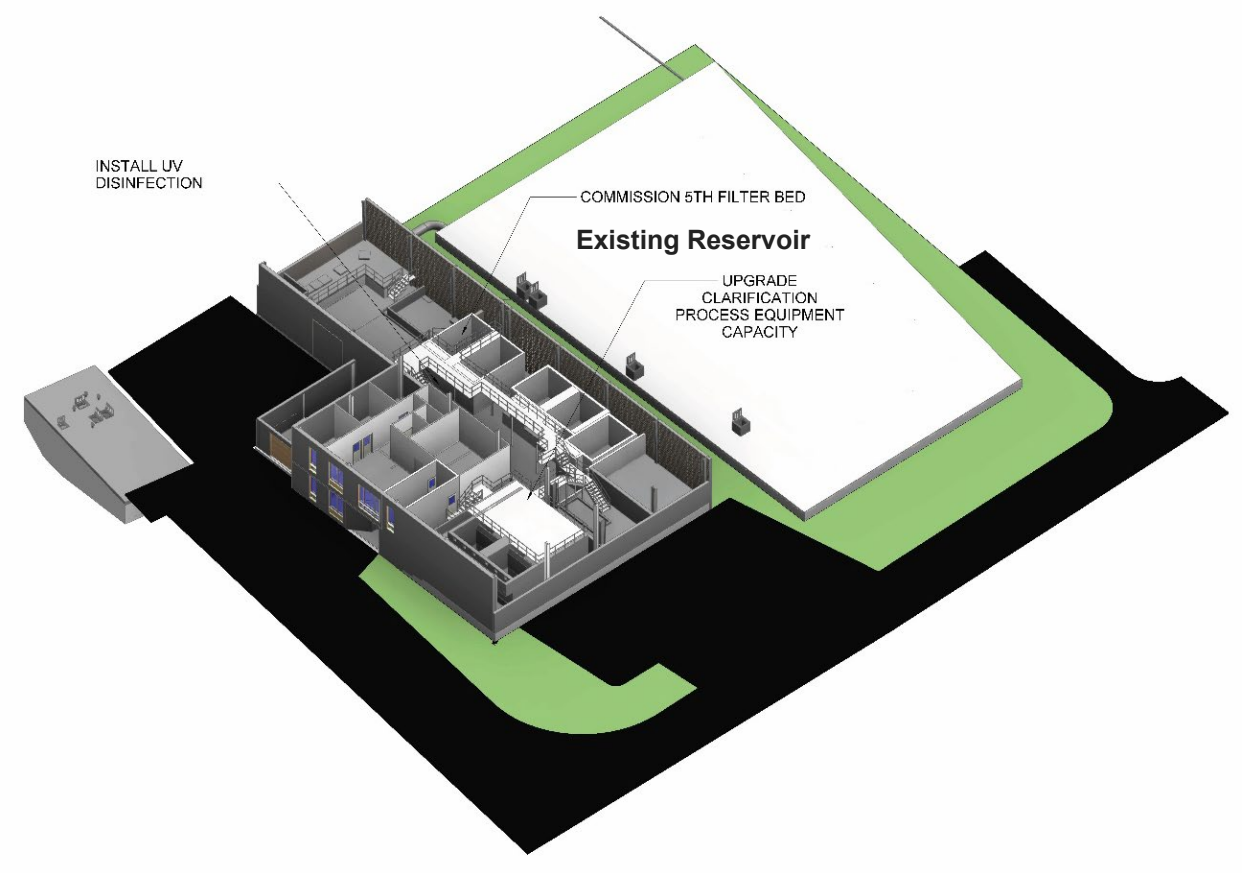


Figure 8: Kincardine WTP Alternative Design 2 - Upgrade with UV Disinfection

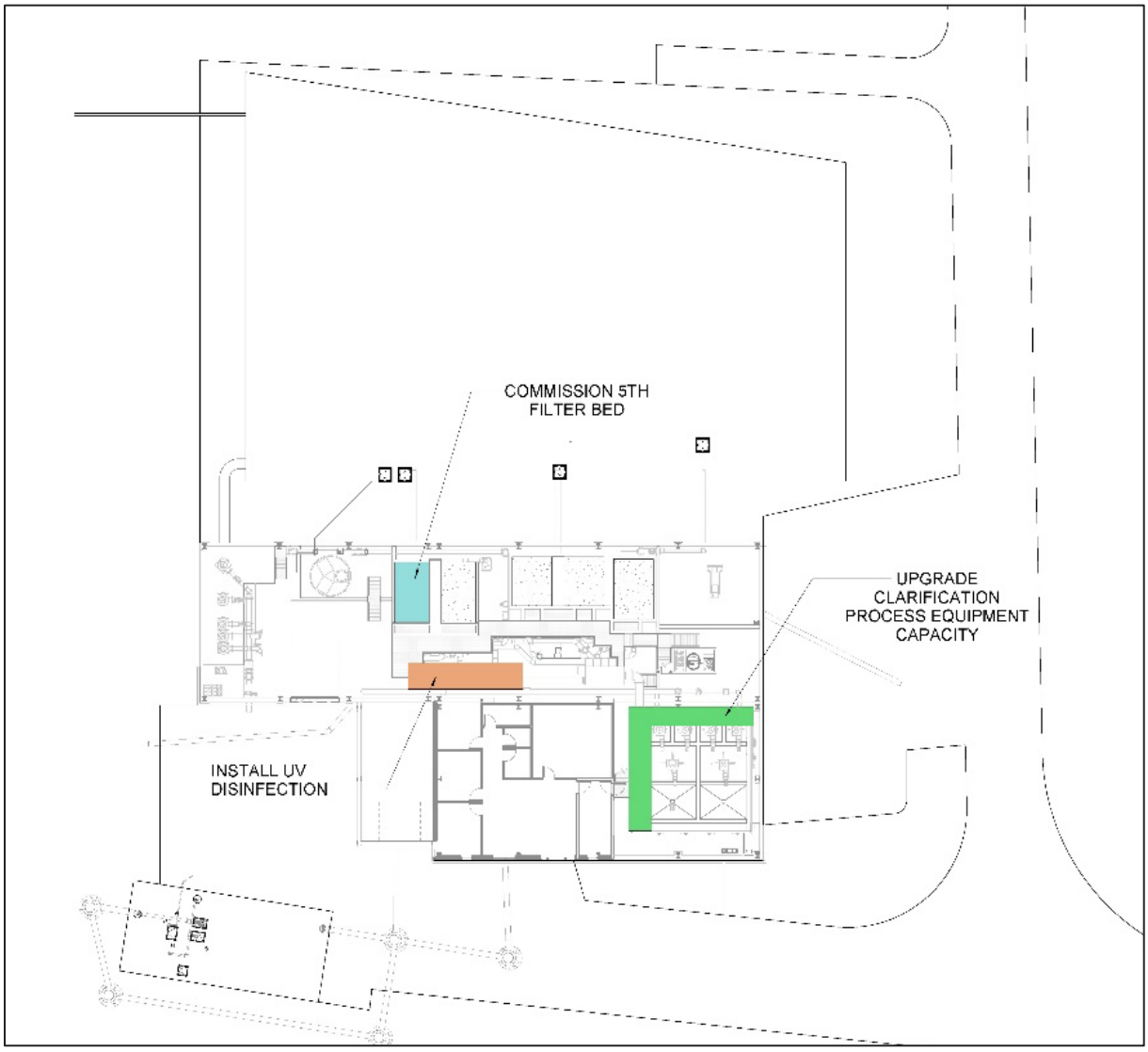


Figure 9: Kincardine WTP Alternative Design 2 - Upgrade with UV Disinfection - Plan View

The following Alternative Designs were identified to expand the treatment and supply capacity of the Kincardine WTP at the existing site, as presented in **Table 13**.

Table 13: Summary of Alternative Designs: Kincardine WTP Processes

Alternative Design	Description

Alternative Design 1: Maintain Chlorine Disinfection Only	• **Can achieve capacity upgrade to 15,500 m³/day**
	• **Maintains the existing gas chlorination system for <u>both</u> primary and secondary disinfection at Kincardine WTP**
	• Ability to achieve higher capacity by:
	  • Increasing chlorine dosing, or
	  • Upgrades to on-site clearwells (for water storage) to improve disinfection treatment (install curtain baffles to increase contact)
	• Low-lift pump capacity, re-rating of treatment processes, and bringing 5th filter online including minor upgrades required
	• **Unlikely to significantly improve on-site water storage available for supply**, therefore additional off-site water storage system would be needed

Alternative Design 2: Upgrade Disinfection with Ultraviolet Light (UV)	• **Can achieve capacity upgrade to 15,500 m³/day** • **Upgrades the existing primary disinfection system to UV disinfection.** Maintains the existing gas chlorination system for a portion of primary disinfection and for secondary disinfection. • Improves multiple-barrier disinfection processes at the WTP, while making additional on-site storage (~2500 m^3) reservoir capacity available for system usage

Alternative Design	Description
	• Low-lift pump capacity, re-rating of treatment processes, and bringing 5th filter online including minor upgrades required • **Results in increase to equalization storage in reservoir to approximately 3,000 m^3, or about 1,300 m^3 increase over existing conditions. Delays need to increase storage within the DWS.**

7.2 Booster Pumping Station

7.2.1 ALTERNATIVES FOR EVALUATION

Alternative Designs were identified as options for the new BPS facility and are described by its major operating feature in **Table 14**.

Table 14: Description of BPS Alternative Designs

Alternative Design	Description
Alternative 1: In-Line Booster Pumping	• Facility with inlet (incoming) and outlet (outgoing) watermains. Inlet supply is pumped by means of one or more pumps depending on system demands or pumps may be bypassed during low demand periods • No storage required
Alternative Design 2: In-Ground Storage and BPS	• Inlet (incoming) watermain enters facility and discharges to an in-ground clearwell for storage • High-lift pumps draw from the clearwell and provide water to the outlet (outgoing) watermain to meet system demands • General footprint anticipated to be larger than Alternative 1 due to construction of clearwell

Alternative Design	Description
Alternative Design 3: On-Grade Storage and BPS	• Inlet (incoming) watermain enters facility and discharges to an on-ground tank • High-lift pumps draw from the tank and provide water to the outlet (outgoing) watermain to meet system demands • General footprint anticipated to be larger than Alternative 1 and 2 since the tank would be sited next to the building, requiring more space

Each alternative also had the following common elements:

- Emergency generator, located outdoors in separate enclosure
- Provision for sodium hypochlorite dosing system and injection locations for maintenance of secondary disinfection to allow for future implementation, if required
- All other appurtenances (fixtures) for proper monitoring and control

7.3 Watermain Extension Alternative Designs

Watermain routing alternatives from the Kincardine drinking water system to the Bruce Power site were generally dictated by:

- Where a connection can be made to the distribution system that provides flow and pressure to supply the Bruce Power site
- Where Bruce Power would prefer the connection point to their property

Hydraulic modeling confirmed that the existing 300 mm diameter watermain at Alma Street and Albert Road has sufficient capacity with the upstream BPS in the Stoney Island Crescent area in operation to supply the Bruce Power site. The Bruce Power preferred connection point is at Tie Road and Concession Road 2.

In addition, preference for the new watermain is to be within an existing right-of-way (ROW) to avoid impacts to vegetation, natural habitat, or nearby properties including avoiding the need for property/easement acquisition.

Based on the above, the shortest route was selected and consists of the following as noted previously in **Section 6.5**:

- Extension of the 300 mm diameter watermain that currently terminates near the Alma Street and Albert Road intersection, along Albert Road to Concession 2.
- Northwest extension of the watermain terminating near the Tie Road and Concession Road 2 intersection, near the Bruce Power site property line.

Based on the upstream and downstream boundary conditions, any other alternative routes would result in a longer length of watermain or would require property acquisition.

The actual alignment within the ROW is to be confirmed during the detailed design stage (Phase 5). Works may be subject to other agency and stakeholder approvals.

7.4 Evaluation of Alternative Designs

The following provides a summary of the methodology and results of the evaluation of the various Alternative Designs for the Kincardine WTP and BPS. In general, the approach was consistent with the methodology used during Phase 2 of the Class EA process when evaluating the alternative servicing solutions.

7.4.1 EVALUATION METHODOLOGY

As part of the Class EA process, the framework and criteria for assessing Alternative Designs are identified to determine the advantages and disadvantages with respect to the natural, social, cultural, technical and financial considerations. **Table 15** shows the evaluation ratings used for this project, which is consistent with the approach used as part of the servicing alternative evaluations undertaken as part of Phase 2 of the Class EA process.

Table 15: Evaluation Ratings for Alternative Designs

Category	Rating/Description
Least Preferred	The alternative was the least preferred among the design options assessed
Moderately Preferred	The alternative was moderately preferred, and had some attributes that allowed it to be rated above another design alternative
Most Preferred	The alternative was rated the highest of the design alternatives, and was most preferred for its category

A qualitative assessment was used for this project where each category was assessed based on how it was preferred in relation to the other design options presented.

A summary of the evaluation of each of the Alternative Design options is included in **Section 7.4.2**. A copy of the full evaluation of Alternative Designs is included in the *Technical Memorandum 1 – Expansion of the Kincardine Water Supply System, Alternative Solution Evaluation for Comment*, and *Technical Memorandum 3 - Proposed New Booster Pump Station – Design Alternative Review Technical Memorandum* in **Appendix F**.

7.4.2 EVALUATION OF KINCARDINE WTP PROCESSES

The Alternative Designs evaluation for expansion of the Kincardine WTP process designs is summarized below in **Table 16.** The full evaluation table is in the Kincardine WTP Technical Memorandum #1 which considered process design requirements and potential BPS locations. The memorandum is included in **Appendix F**.

Table 16: Summary of Alternative Designs Evaluation: Kincardine WTP Processes

CRITERIA	Alternative Design 1: Maintain Chlorine Disinfection Only	Alternative Design 2: Upgrade Disinfection with Ultraviolet Light (UV)
Social Environment	Moderately Preferred	Most Preferred
Cultural Environment	Moderately Preferred	Most Preferred
Natural Environment	Least Preferred	Most Preferred
Technical Environment	Moderately Preferred	Most Preferred
Financial Environment	Least Preferred	Most Preferred
OVERALL	**Moderately Preferred**	**Most Preferred**

Alternative Design 2 is the preliminary design concept for the WTP for the following reasons:

- Moderate construction disruption compared to Alternative 1, however UV provides better treatment options overall and an additional treatment barrier for disinfection
- All major process work contained within the Kincardine WTP, therefore low cultural heritage or natural environment impacts
- This alternative will allow for repurposing of a portion of existing water storage in the reservoir that was reserved for the disinfection process. With the added UV measure, this storage can be made available for supply. This will delay the need to increase system storage as well as address current storage deficiencies within the system. In addition, Bruce Power is intending to add storage within their system to reduce impacts on the Kincardine DWS
- Lower financial (capital) cost of UV disinfection, on the basis that cost of added storage in the system would exceed the cost of UV installation

7.4.3 BPS TYPE ALTERNATIVE DESIGNS SUMMARY

The Alternative Designs evaluation for BPS type is summarized below in **Table 17**. The full evaluation table is in the Alternative Designs Technical Memorandum #3 in **Appendix F**.

Table 17: Evaluation Summary: Alternative Designs: BPS Type

CRITERIA	Alternative 1: In-line booster pumping	Alternative 2: In-ground storage and bps	Alternative 3: On-grade storage and bps
Social Environment	Most Preferred	Moderately Preferred	Least Preferred
Cultural Environment	Most Preferred	Moderately Preferred	Least Preferred
Natural Environment	Most Preferred	Moderately Preferred	Least Preferred
Technical Environment	Moderately Preferred	Most Preferred	Least Preferred

CRITERIA	Alternative 1: In-line booster pumping	Alternative 2: In-ground storage and bps	Alternative 3: On-grade storage and bps
Financial Environment	Most Preferred	Least Preferred	Moderately Preferred
OVERALL	**Most preferred** ★	**Least preferred**	**Least preferred**
SUMMARY	Provides the lowest capital and longer-term O&M costs and meets the servicing objectives. Although the option does not include additional storage, system storage is addressed in other parts of the system.	Provides additional storage and can improve operational items related to hydraulics, but overall benefit is outweighed by higher capital and operational costs and potential need for additional property.	Provides additional storage and can improve operational items related to hydraulics, but overall benefit is outweighed by higher capital/ operational costs, possible additional property, and potential issues with aesthetics depending on final site and proximity to residents.

Alternative Design 1, which consists of an in-line BPS, is the preferred design concept for the following reasons:

- Smallest overall footprint – reduces the area of potential impact for the natural, social and cultural environments.
- In-line system with no on-site storage reduces visual and construction-related disruptions to local residents.
- Meets the technical requirements as it boosts pressure for downstream customers.

- Although storage is not provided, it is not required at this time or to address the supply needs of Bruce Power as Bruce Power will provide on-site storage.
- Lowest financial (capital) cost of the alternatives.

7.5 Selection of Preferred Alternative Design

Based on screening of the various alternative design options, the preferred solution is

- Expansion of the Kincardine WTP with UV Disinfection.
- A New in-line BPS consisting of new facility to house pumps to supply the range of system demands. The proposed BPS site location is to be determined but will generally be in the vicinity of Stoney Island Crescent or further south near Concession 5, as previous hydraulic modeling confirmed that a facility in this general area would provide a balance between maintaining upstream pressures and providing flows and pressures to meet the downstream demands of existing users and the Bruce Power site.
- Watermain Extension: A 300mm dia. watermain extension within ROW from Alma St./Albert Rd. to Bruce Power property line at Tie Road/Concession Rd. 2.

8 Project Description

Based on the Evaluation of Alternative Design Concepts, WTP Alternative 2 (UV Disinfection) and BPS Alternative Design 1 have been identified as the Preferred Design Solution.

8.1 Design Elements

The Preferred Design consists of the following main elements:

Expansion of the Kincardine WTP

- Capacity increase to 15,500 m³/day
- Upgrade disinfection system to include UV disinfection
- Replacement of low-lift pumps to increase firm capacity to ~16,200 m³/day which accounts for in-plant water uses
- Maintaining existing gas chlorination system for secondary disinfection and as part of the primary disinfection process
- Adjustment to operational setpoints to increase available storage in the clear well
- Addition of the Filter 5 basin into production, including media placement, piping, and all related valving and controls
- Re-rating of the high-rate sedimentation process
- Improvements to coagulant addition and mixing to improve treatment efficiency
- Electrical and instrumentation upgrades for proper monitoring and control

New BPS Facility

- In-line BPS, consisting of new facility to house pumps to supply the range of system demands
- Provision of emergency generator
- Sodium hypochlorite dosing system for maintenance of secondary disinfection
- Electrical and instrumentation upgrades for proper monitoring and control

Watermain Extension

- 300 mm dia. watermain extension within ROW from the Alma Street and Albert Road intersection, along Albert Road to Concession Road 2, west along Concession Road 2 to the Bruce Power property line near the Tie Road and Concession Road 2 intersection
- Monitoring and control chamber near the property line for the service to the Bruce Power site to include billing meter, backflow preventor, control valve, and other appurtenances as required

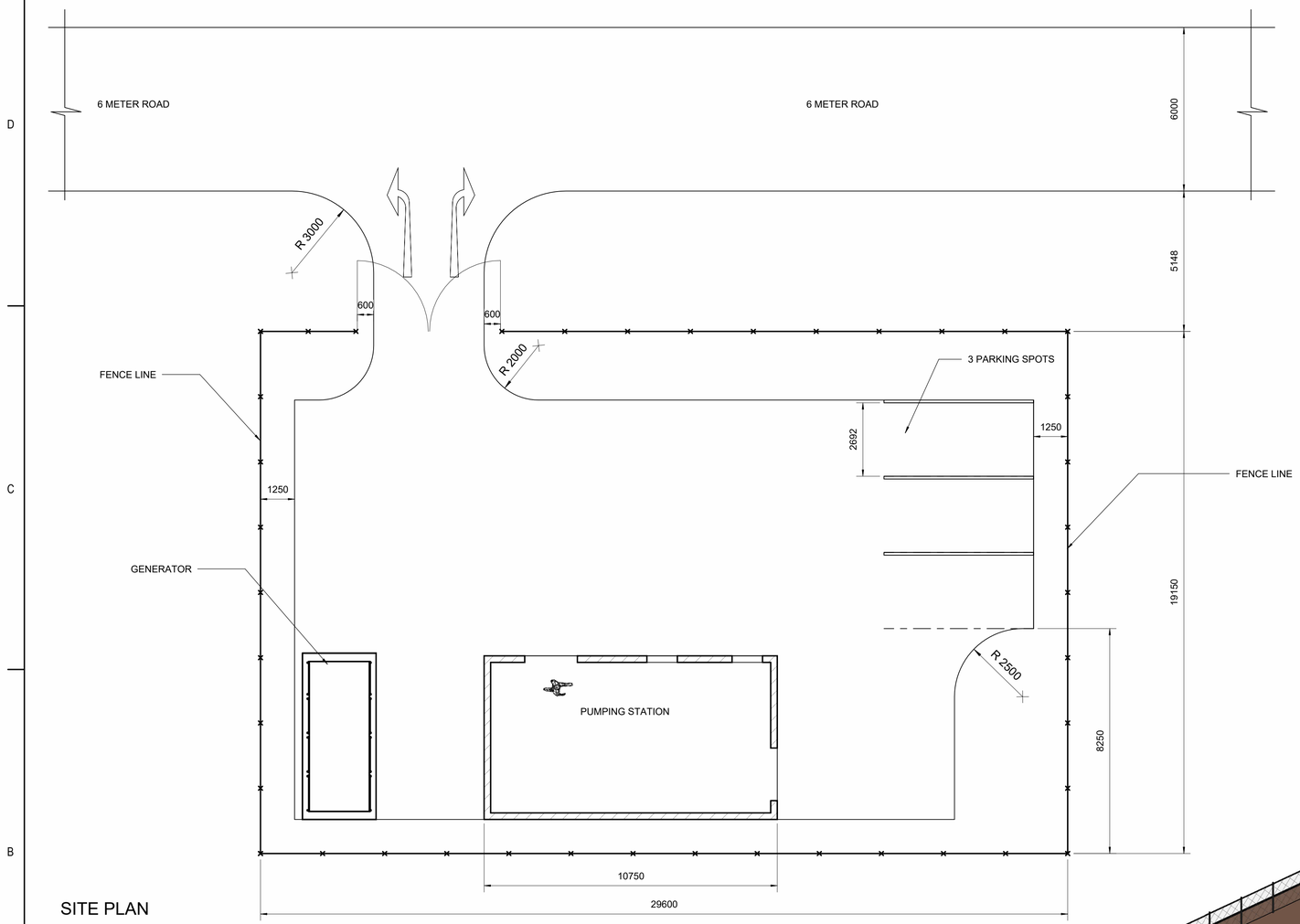
Figure 10 includes the BPS Site Plan Concept, used to determine potential property requirements and preliminary sizing. Details would be refined further in detailed design.

8.2 Utilities

There are no major changes to utilities associated with the Kincardine WTP. Primary power to the facility is adequate to address proposed upgrades. As part of the detailed design stage, modifications to the existing heating and cooling systems for the WTP may require minor utility upgrades.

The proposed BPS will require a primary electrical service entrance of 200A, 600Y/347V. Depending on final design preferences, there may be a need for a natural gas service to the site for building HVAC needs and/or as a potential fuel source for the standby emergency generator. In addition, connection to a storm sewer would be required to address on-site wastewater generation from analyzers and sampling ports.

Localized watermain work for connections to and from the new BPS and extension of the 300 mm diameter watermain to the Bruce Power site property line will involve work in proximity to existing utilities, including but not limited to sewers, gas, communications, and electrical (buried and overhead). Potential utility conflicts may be encountered but would be addressed as part of later design and construction phase.



SITE PLAN

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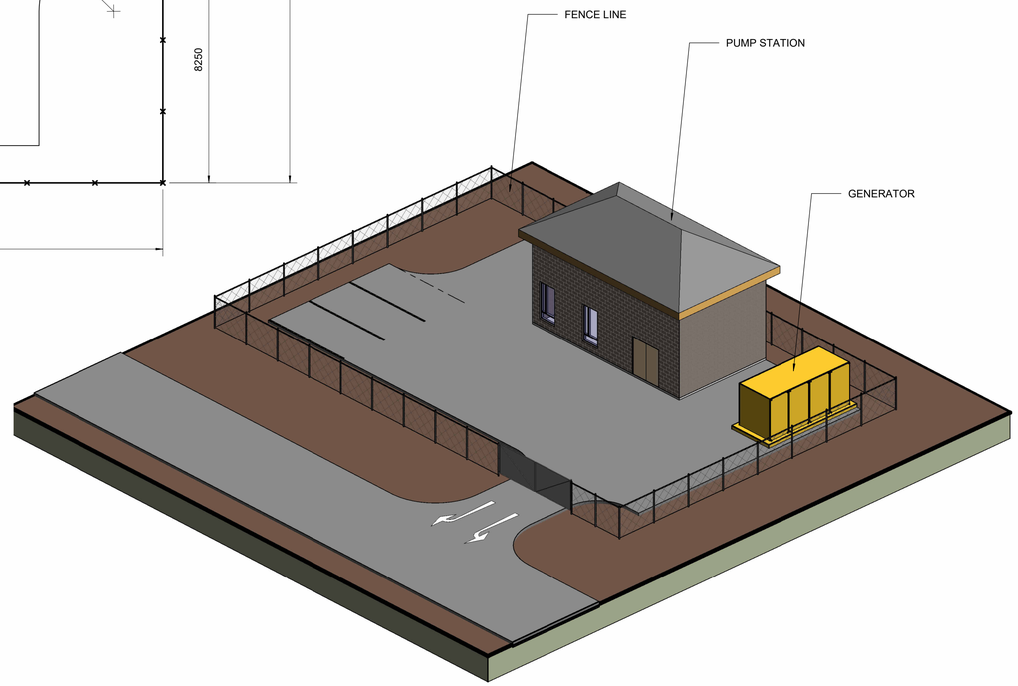

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Notes

Revision	By	Appd	YYYY.MM.DD
A Conceptual Design Report	JK	NO	2023.09.21

Issued	By	Appd	YYYY.MM.DD
File Name: N/A	SP Dwn.	JK Dsgn.	NO Chkd. 2023.09.21 YYYY.MM.DD

Issue Status

This document is suitable only for the purpose noted above.
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Client/Project
MUNICIPALITY OF KINCARDINE

Kincardine Water Supply EA

Kincardine, ON

Title
BOOSTER PUMP STATION - SITE PLAN

Figure 10

Project No.	Scale
165630238	1 : 100

Revision

Drawing No.
-C101

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ORIGINAL SHEET - ANSI D

8.3 Identification of a BPS Location

8.3.1 COMMENTS RECEIVED AT PIC #1

While the SWM pond site was initially identified on a preliminary basis as the preferred site, comments during PIC 1 (**Section 3.5.2**) and PIC 2 (**Section 3.5.3)** included some adjacent landowner concerns with this location:

- Consider local drainage conditions at the proposed site of the BPS – some localized flooding concerns at the Stoney Island Crescent location have been observed by residents and this information was provided to the project team.
- Seek to avoid loss of open space and access to natural or beach areas.
- Consider potential sensitive environmental features at the SWM pond site.
- Consider concerns about traffic and construction disruptions.
- Ensure that the Municipality considers other parcels, including former well house site or sites east of Bruce Road 23 and away from the residential area.

The project team reviewed the comments received after PIC 1 and revised the potential siting option on the SWM pond site for a BPS. A primary consideration was to avoid impacting the existing SWM pond or its flood storage limits. The project team also placed greater attention on local drainage conditions to site the BPS away from overland flow routes which occur from east to west and ultimately towards Lake Huron. Siting was also revised to move the potential BPS location to the rear of the property to avoid conflicts with underground infrastructure such as buried underground stormwater inlet and outlets.

The revised conceptual site plan was presented at PIC 2 for public comment. As shown in **Figure 11**.

As noted during PIC 2, the Municipality was also considering additional property in this general area of Kincardine. While no specific properties were identified, an overall area was presented as part of PIC 2 which would still offer equal hydraulic performance benefits and access to the existing 300 mm watermain. Prior to PIC 2, the Municipality of Kincardine also attempted to reach the owner of a former pumphouse building on the corner of Bruce Road 23 at Stoney Island Crescent to consider whether that site may be viable, however no response was received.

Since PIC 2, additional hydraulic review confirmed that the potential BPS locations could extend further south towards Concession Road 5, as shown in **Figure 12**.

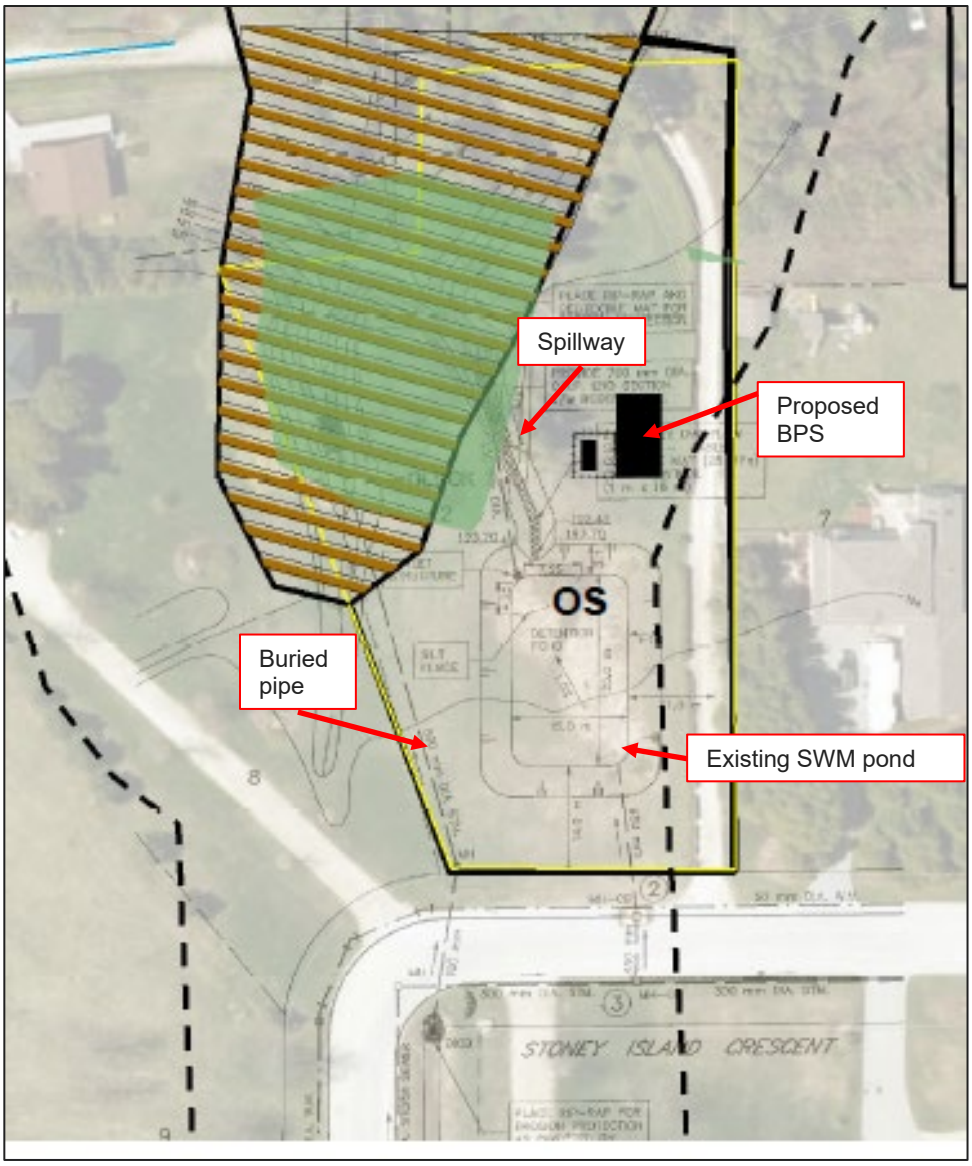
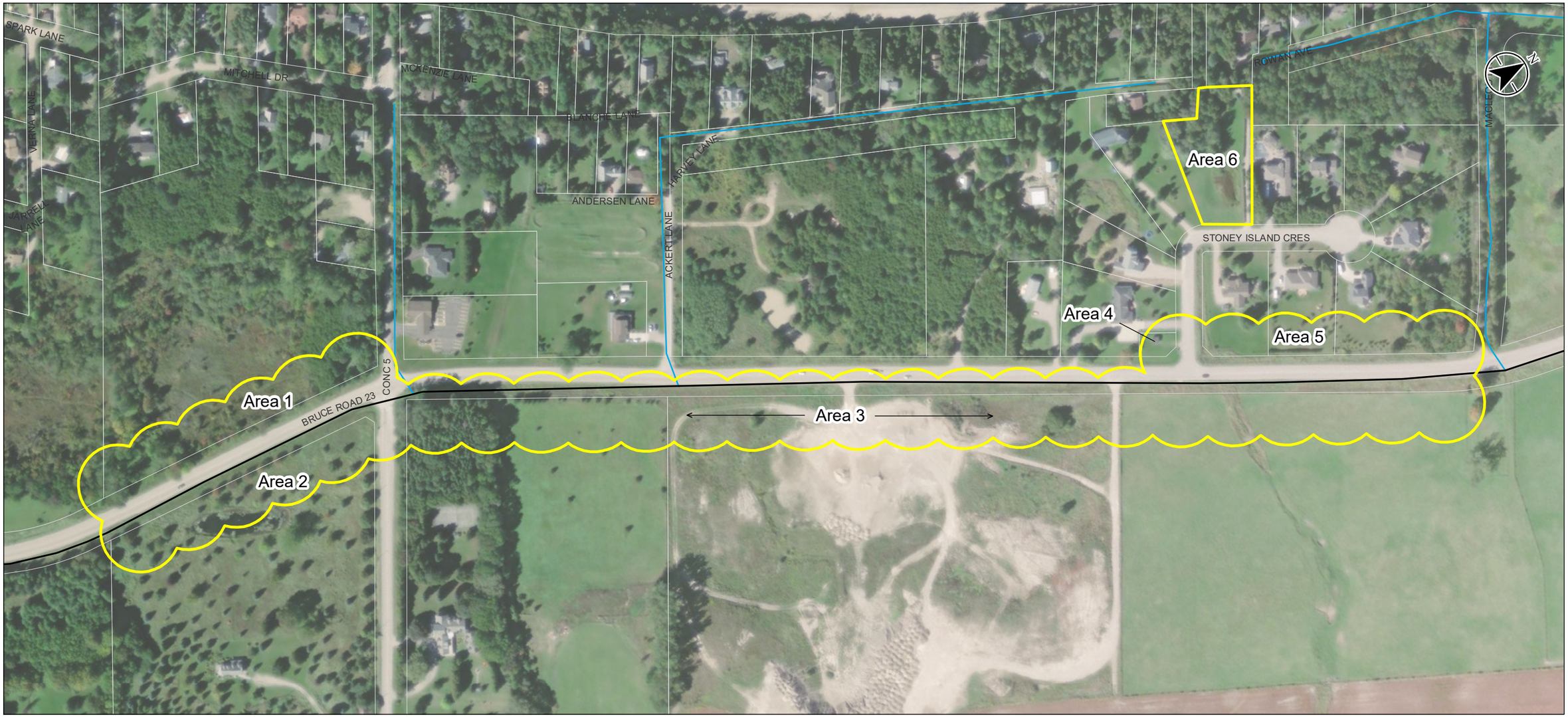


Figure 11: Conceptual Revised Location of a BPS located on the SWM Pond site (as presented at PIC2)



Legend

- Potential BPS Location
- Existing Watermain
- Future Watermain
- 100 - 250 mm
- 300 - 400 mm

0 50 100 m

1:3,000 (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 CSRS UTM Zone 17N
2. Contains information licensed under the Open Government Licence – Ontario.
3. Imagery Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

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Project Location
Municipality of Kincardine

165630178 REVA
Prepared by KB on 2023-10-10

Client/Project
MUNICIPALITY OF KINCARDINE
WATER SYSTEM EXPANSION
MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT

Figure No.
12

Title
Potential BPS Locations

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8.3.2 EVALUATION OF ALTERNATIVE SITES NEAR STONEY ISLAND CRESCENT

Input received during the consultation process about the BPS location, access using a road easement, and site constraints together indicated that alternative locations should be evaluated near Stoney Island Crescent.

Properties in the vicinity of Stoney Island Crescent (as indicated in **Figure 12**) are expected to have similar hydraulic conditions and a similar ability to connect to the existing 300 mm dia. Watermain. An overall area was presented as part of PIC 2, however subsequent to the PIC additional properties closer to Concession Road 5 would also still meet these considerations and are included in the figure.

The project team completed a secondary analysis as part of the Evaluation of Potential Effects and Mitigation of this ESR. **Table 20** in **Section 9** provides a summary of each potential site area as depicted in **Figure 12** in relation to the evaluation criteria to assist with the identification of preferred sites for the BPS, subject to land acquisition. Such considerations will be made in Detailed Design as part of final site selection and based on property availability.

8.4 Property and Access

The BPS will require approximately 0.25 acres (approximately 30 m by 30 m) of property in the vicinity of Stoney Island Crescent at minimum to house the BPS, including standby generator, to accommodate on-site operator parking and provide opportunity in the future to expand the facility, if required.

Following PIC 1, the Municipality sought to engage with the potential landowner of the former pump house property at the entrance to Stoney Island Crescent to determine its interest in being considered as a site option. Despite multiple attempts to reach the landowner, no response has been provided and its potential as a site could not be verified.

The Municipality will continue to engage with nearby landowners to identify whether an alternate similar property near the existing watermain may become available. Further hydraulic investigations can be conducted in Detailed Design for the preferred site, along with any required site-specific environmental investigations.

Many site options are possible with connections to roads such as Bruce Road 23 or Concession 5, as discussed in **Section 9**. Should the BPS be located at the SWM pond site, access via the driveway along the north side of the SWM pond which may be used currently for private property access should be confirmed in Detailed Design.

8.5 Cost Estimate

An opinion of probable cost (Class 3 and 4) was prepared for the proposed upgrades to the WTP and for the new BPS and watermain extension. Cost estimate class levels and accuracy ranges followed the Association for the Advancement of Cost Engineering (AACE) Recommended Practice No. 56R-08. To confirm the overall feasibility of expanding the WTP, further analysis and conceptual level design was completed as part of Phase 3 of the Class EA process, and therefore the Class 3 accuracy level was considered appropriate. Given the alternative site options for the BPS and potential for impacts on costing to develop and service the site, cost estimates related to the BPS and watermain follow the Class 4 accuracy level.

Further refinement of the BPS and watermain estimate to a Class 3 accuracy level will be completed once site selection is confirmed. **Table 18** and **Table 19** below provides a general summary.

Table 18: Kincardine WTP Class 3 Cost Estimate (-15% to +20%)

Item	Cost ($)
Process Upgrades	$3,216,500
Structural Upgrades	$281,500
Mechanical Upgrades	$239,500
Electrical Upgrades	$1,679,000
Non-Capital Recommendations	$57,500
Sub-Total	$5,474,000
Contingency (15%)	$821,100
Engineering (17.5%)	$957,950
Installation & Commissioning (2.5%)	$136,850
Total	$7,389,900

Table 19: New BPS and Watermain Class 4 Cost Estimate (-20% to +30%)

Item	Cost ($)
Watermain including Restoration	$1,810,000
Booster Pump Station	$1,750,000
Sub-Total	$3,560,000
Contingency (15%)	$534,000
Engineering (17.5%)	$623,000
Inspection & Testing (1.5%)	$53,400
Total	$4,770,400

The preliminary cost estimate excludes costs associated with land acquisition for the new BPS or the need for any temporary or permanent easements, and excludes

potential additional studies, if any, which may be required subject to confirmation of the site selected. While an attempt has been made to address potential utility costs, it is noted that these were derived from recent projects of similar nature and therefore the actual costs may vary at the time of design and construction.

The Municipality is working with Bruce Power, which will serve as a funding partner and will contribute to upgrades related to the WTP and the required BPS and extension of the existing watermain to provide supply to the Bruce Power site.

8.6 Implementation Timeframe and Schedule

It is anticipated that the implementation of the proposed works, including the Kincardine WTP capacity expansion, new BPS, and watermain extension to the Bruce Power site will commence once the servicing agreement is in place.

Based on the overall scope of work, detailed design is anticipated to take approximately 6 to 7 months to complete, with tendering and construction to take approximately 18 months until the proposed upgrades are in service.

Potential sequencing of upgrades within the Kincardine WTP could result in additional time required to complete internal works while mitigating impacts to supply to the Kincardine distribution system.

8.7 Future Servicing Needs and Phasing

The Preferred Design Concepts presented will address immediate works (Stage 1) that are required for servicing of the Bruce Power site and proposed development within Kincardine to 2043. However, servicing of the Bruce Power site does reduce residual capacity at the end of the system from what would have been available for additional servicing needs within the Municipality beyond the current planning period. In the future, if and when, required based on population demand increases, **Phase 2** works to reestablish this capacity may include:

- Additional BPS in the vicinity of the Riggin Park (Site A from PIC 1) area to boost upstream pressures.
- Additional watermain twinning of 300mm dia. watermain or replacement of a portion to increase capacity.

A future EA study would confirm the extent of works required for a future BPS and other works. **Figure 13** identifies a conceptual area of focus for a future BPS in the vicinity of Riggin Park, as it meets the hydraulic conditions for a future BPS to reestablish residual capacity while mitigating impacts to level of service for system users.

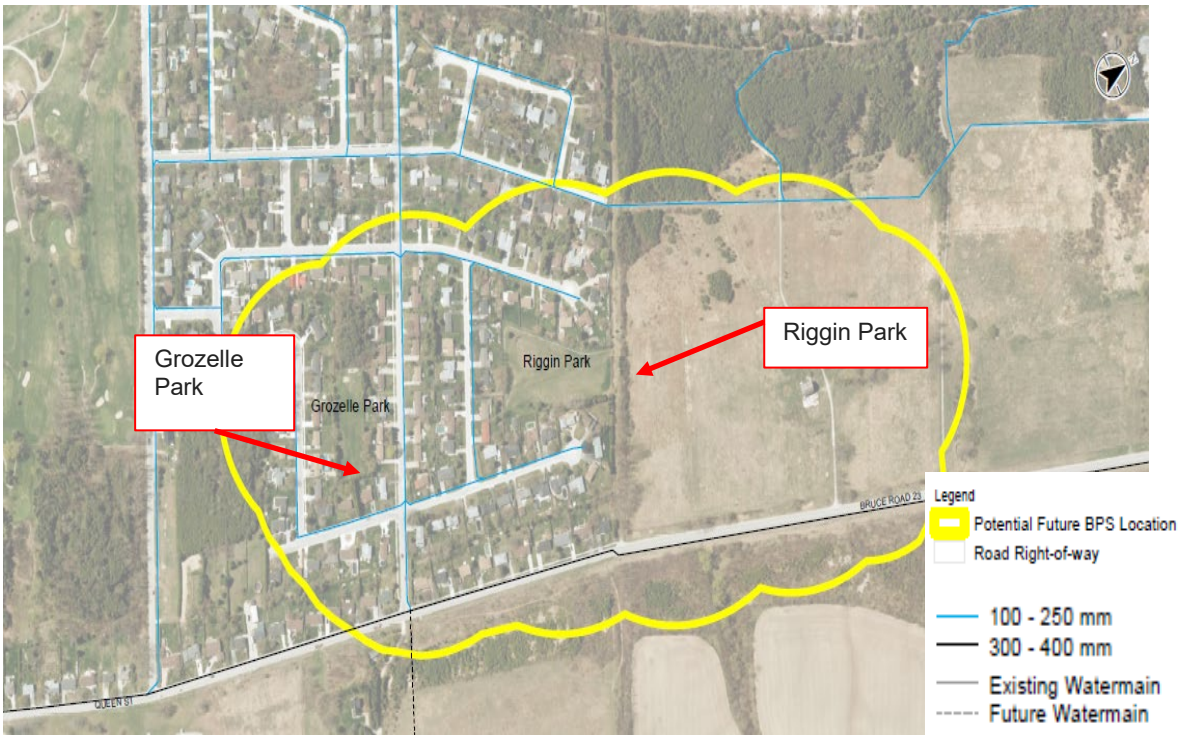

Figure 13: Future Phasing Opportunities - Phase 2 Future Growth

9 Environmental Impacts and Proposed Mitigation Measures

The potential impacts to natural features that might reasonably be expected to occur as a result of the proposed BPS and extension of the existing watermain are identified and discussed in this section.

- **Kincardine WTP:** As works related to the Kincardine WTP are generally limited to the building footprint, no impacts to natural features are expected for that component of the work.
- **Watermain extension:** In general, watermain infrastructure to service the BPS will be constructed within the existing ROW to connect to the 300 mm diameter watermain on Bruce Road 23. The design of the new BPS and the watermain extension will be completed in the next phase following the EA, in Detailed Design (Phase 5).
- **BPS location:** While several sites have been identified as potential locations for the BPS, the advantages and disadvantages of each location vary to some extent based on land availability. In addition, although desktop evaluation of cultural heritage and natural environmental impacts has been undertaken as part of the evaluation of Alternative Solutions and Alternative Designs, as part of the Class EA process, depending on the preferred location additional investigation and assessment of mitigation measures may be required.

A conceptual BPS layout was shown in **Figure 10**, and the site for the BPS will be in the vicinity of Stoney Island Crescent or within an area to the south extending up to Concession Road 5.

Table 20 provides a summary of each potential site area depicted in **Figure 12** in relation to the evaluation criteria to assist with the identification of preferred sites for the BPS, subject to land acquisition.

An Environmental Impact Study (EIS) will be completed for all project components during Detailed Design to identify site-specific requirements and natural heritage features (e.g., SAR) that may be impacted by the project once the BPS property site has been confirmed.

Avoidance and mitigation measures are available to reduce impacts to wildlife habitat and their habitat, however they should be confirmed as part of the EIS, including the use of timing windows for vegetation removal to reduce periods where migratory birds and/or SAR species such as bats may be present. .

Table 20: Identification of Alternative BPS Sites, Stoney Island Crescent and Concession 5

Area Description	Evaluation	Discussion
Area 1 Southwest corner of Bruce Road 23 and Concession 5	• **Social Environment:** No homes present in Area 1, which minimizes potential for noise, air quality (dust), and other potential impacts. Kincardine trail is present along Bruce Road 23 on the west side. Access should be maintained and considered in detailed design. • **Cultural Environment:** Not in the Built Heritage or Stage 1 archaeological assessment study area. Further study would be required prior to construction, if selected. • **Natural Environment:** Large amount of vegetation/tree removal required. No watercourses present. No significant woodlands or wetlands identified in the background review. Further Natural heritage EIS site visit will be required in detailed design if selected. • **Technical Environment:** Location would allow for connection to existing 300mm watermain but would a require crossing of Bruce Road 23. Location also requires crossing near a 600mm culvert and several utilities including fiber optic. Location could allow access from Concession 5 or Bruce Road 23. • **Cost:** Not municipality owned. Land acquisition would be required.	**Low preferred** – Meets technical requirements, however higher natural environment impacts that cannot be avoided. Similar Cultural and Social Environments to other Area options.
Area 2 Southeast corner of Bruce Road 23 and Concession 5	• **Social Environment:** No homes present in Area 2, although the property includes a large home. Location close to Bruce Road 23 or Concession Road 5 may reduce potential noise, air quality (dust) impacts. No Kincardine trail present on the east side of the Highway. • **Cultural Environment:** Not in the Cultural Heritage or Stage 1 archaeological assessment study area. Further study would be required prior to construction, if selected. • **Natural Environment:** Minor vegetation/tree removal required, and potential for some avoidance as many are individual planted trees. No watercourses present. No significant woodlands or wetlands identified in the background review. Further Natural heritage EIS site visit will be required in detailed design if selected. Existing ditch along west limit along Bruce Road 23 could provide outlet for on-site stormwater management/control. • **Technical Environment:** Area appears to be lower than roadway, therefore site grading and fill may be required. Depending on exact location, there is the potential to access the site off Concession 5, otherwise off of Bruce Road 23 (requiring culvert). Provides easier opportunity to connect to existing 300mm watermain which runs off east edge of roadway, compared to Area 1. • **Cost:** Not municipality owned. Land acquisition would be required.	**Moderately preferred -** Meets technical requirements. Less natural environment impacts compared to Area 1 and 6. Similar Cultural and Social Environments to other Area options.

Area 3 Proposed parcel within lands east of Bruce Road 23, between Concession 5 and approximately Macleod Drive	• **Social Environment:** No homes are present within Area 3 near Bruce Road 23 which reduces potential for construction noise and air quality (dust) impacts. Area 3 has a mixture of land use conditions:
	  ○ A land parcel within this area is an active gravel pit, and licensing impacts for the operator may limit the suitability of the site (less preferred).
	  ○ The northernmost parcel is agricultural land (moderately preferred within Area 3). An Agricultural Impact Study may be required if Class 1-3 agricultural land is present and cannot be avoided.
	  ○ The parcel to the south of the gravel pit is more open and is pastureland (most preferred within Area 3).
	• **Cultural Environment:** Area 3 north of the Stoney Island Crescent subdivision were part of the Built Heritage and archaeology study area and have been assessed. Site options exist that can avoid construction within 50 m of 365 Bruce Road 23, a property older than 40 years and a potential heritage property). The gravel pit, and areas to the south, have not been assessed for Built Heritage or Stage 1 archaeological Assessment. Further study would be required prior to construction, if selected.
	• **Natural Environment:** Large amounts of vegetation/trees are present near Concession Road 5, although the preferred design concept can avoid tree removal in this area. Watercourses are present near Ackert Lane and Stoney Island Crescent, but there is potential to avoid these Conservation Authority Regulatory areas. Further engagement with the Conservation Authority is recommended if the regulatory areas will not be avoided to determine permit requirements. Further Natural heritage EIS site visit will be required in detailed design if selected.
	• **Technical Environment:** North and south of the gravel pit are generally more open with many options to place the conceptual BPS.
	• Land generally undulates but drops off from Bruce Road 23 in some areas which may impact design of lot grading and overland flow.
	• Some flat areas are present towards the north of Area 3, potentially providing easier opportunity for site grading and stormwater management. Land provides improved opportunities to connect to the existing 300mm watermain which runs off the east edge of Bruce Road 23. Access off Bruce Road 23 will require a culvert.
	• **Cost:** Not municipality owned. Land acquisition would be required.
		Moderately preferred - Meets technical requirements. Moderate potential to impact natural areas compared to Areas 1, 2 and 6, although some areas such as pastureland may be preferred over active agricultural areas. Impact to gravel pit operations should be avoided, if this option is selected.

Area Description	Evaluation	Discussion
Area 4 Southwest parcel near Bruce Road 23 and Stoney Island Crescent (3 Stoney Island Crescent)	• **Social Environment:** No homes present. One adjacent home is close to the property line with not existing barrier or fence present. The property is the site of a former well house. Residents are familiar with this structure which is already present in the landscape. Would require demolition of existing structure. Landowner has not been responsive to date, which may add risk. • **Cultural Environment:** Building on this parcel has the potential to avoid being within 50 m of 365 Bruce Road 23. Further Stage 2 archaeological assessment required. • Potential for additional traffic impacts for access to and from Stoney Island Cresent, however extent should be limited if work can be kept within south edge of roadway. • Site would be adjacent to existing residential home. Some site aesthetics/planting may be required incorporate the design into the neighbourhood. • **Natural Environment:** Site of former well house. The parcel does not have significant natural features as it features a cut lawn. Across from Stoney Island Crescent is a watercourse that is regulated by the Conservation Authority. • **Technical Environment:** Parcel size is approximately 448 m², therefore some modifications to the general layout for the proposed BPS site would be required to accommodate the available space. Location would allow for connection to existing 300mm watermain but would require crossing of Bruce Road 23. Located in the Municipality of Kincardine. • **Cost:** Not municipality owned. Land acquisition would be required.	**Most Preferred –** Low potential for natural environment impacts and low potential for social/cultural impacts since there is already a structure used for a similar purpose on that site.
Area 5 Proposed parcel within lands west of Bruce Road 23, generally between Stoney Island Crescent and Macleod Drive	• **Social Environment:** Extent of available property may be limited. The Area is to the rear of large residential homes, and there may be potential for construction noise and dust impacts. Kincardine trail is present to the rear of the residential properties. • Cultural Environment: No further Stage 2 archaeological assessment for portions within the ROW. If further property is required, further Stage 2 archaeological assessment would be required. • **Natural Environment:** Limited natural environment features due to the presence of a residential subdivision, although a watercourse is present along Stoney Island Crescent at the south end of Area 5. Steep grade noted off of Bruce Road 23. which could limit feasibility of siting a BPS in this location without additional impact to adjacent residential property. Natural heritage EIS site visit will be required in detailed design if selected. • **Technical Environment:** Steep grade off Bruce Road 23. which could limit feasibility of siting a BPS in this location without additional impact to adjacent residential property. Impact to the County Road drainage would be anticipated. Location would allow for connection to existing 300mm watermain but would require crossing of Bruce Road 23. Site location to avoid conflict with existing 900mm drainage pipe and utilities including fiber optic. Located in the Municipality of Kincardine. • **Cost:** Area outside of the right of way is not municipality owned. Land acquisition would be required.	**Least preferred –** Limited space to construct, and potential for impacts (Social/Technical) is high.
Area 6 Stoney Island Crescent SWM block	• **Social Environment:** Limited construction impacts from noise and dust as the BPS would be sited to the rear of the SWM block. Likely location would be to the north end of the site within current open space area which is used by the local community. • **Cultural Environment:** The SWM block was included as part of the Built Heritage background review and Stage 1 archaeological assessment. Further Stage 2 Archaeological Assessment is required in portions of the site. Construction is anticipated to avoid occurrence within 50 m of a potential heritage residence building (11 Stoney Island Crescent structure). • **Natural Environment:** A woodland is present that is listed as part of the Natural Heritage System in the Kincardine OP. The site features a steep slope which can be avoided. The location in the north portion of the site can avoid the Conservation Authority watercourse regulatory area, although further consultation may be required as it is adjacent to work areas. A Natural heritage EIS site visit will be required in detailed design if selected. • **Technical Environment:** Requires the longest watermain interconnection as supply and discharge line would need to connect to existing 300mm watermain on Bruce Road 23 using a road crossing. The site is more constrained in comparison to most other options and would need to avoid existing storm sewer and drainage lines and mitigate impacts to storage within stormwater pond. Access to this area may require easement agreement with landowner as existing gravel access road is not municipally owned. Located in the Municipality of Kincardine. • **Cost:** Municipality owned property, however provisions for using the adjacent road allowance are not confirmed. Higher watermain connection costs due to the distance from Bruce Road 23 compared to closer options.	**Low to Moderately preferred -** Some potential to construct, however limited public interest in the option and site is environmentally constrained for future expansion since it is adjacent to a woodland area.

9.1 Natural Environment

9.1.1 POTENTIAL FOR VEGETATION REMOVAL

Vegetation removal will be required associated with the Stoney Island BPS site to accommodate the approximately 0.25 acre footprint for the BPS structure. If selected, Area 4 (former pump station) would have the least need for vegetation removal as no trees are present on the site and it features a maintained lawn.

Wooded areas identified during the Terrestrial Ecosystems memo mapping should be avoided to the extent possible. These wooded areas are associated with Area 1, the southern portion of Area 3 along Concession Road 5, and at the southwest portion of the Area 6 SWM pond site. Notably, the wooded area in the southwest portion of the Area 6 SWM pond property consists of a ravine area, and if selected, the BPS should be sited to avoid or reduce impacts to this area to the extent possible.

Some roadside vegetation removal may be required to accommodate the installation of the 1.1 km watermain extension from Alma Road/Albert Road and Concession 2. The watermain extension will be sited to avoid impacts to Inverhuron Provincial Park located south of Concession Road 2. The final alignment of the watermain within the ROW will be determined in detailed design to reduce vegetation removal to the extent possible.

Avoidance and mitigation measures are available to reduce impacts to adjacent vegetation, including the use of sediment fencing to delineate the areas of construction and to avoid encroachment into natural areas. An Ecological Land Classification (ELC) investigation completed as part of the Natural Environment EIS study in detailed design is recommended to confirm vegetation classification prior to removal.

9.1.2 POTENTIAL TO IMPACT SPECIES AT RISK AND SPECIES OF CONSERVATION CONCERN

The highest quality habitat available in the study area was identified as woodlands, grasslands, and wetlands outside of the ROW. Along road ROWs, sensitive SAR and Species of Conservation Concern (SOCC) would be less likely to occur. However, it is more likely that SAR and/or SAR habitat will be located adjacent to municipal road ROWs.

Further natural environment investigations are recommended during the Detailed Design phase prior to construction, including a significant wildlife habitat assessment and SAR search for impacted areas to consider whether SAR and/or SAR habitat may be present.

The following standard mitigation measures/best practices are provided to reduce potential impacts to natural heritage features during construction:

- Delineate the Project Footprint with tree protection fencing prior to construction to reduce impacts to adjacent natural features.

- Wash, refuel, and/or service equipment a minimum of 30 m from surface waters to reduce the risk of deleterious substances from entering surface waters. Check machinery regularly for fluid leaks.

- Develop a Spill Management Plan and have it on site for implementation in the event of an accidental spill. Keep an emergency spill kit on site.

9.1.3 EROSION AND SEDIMENT CONTROL

An erosion and sediment control (ESC) plan should be developed and employed during construction to reduce the risk of erosion and the entry of sediment into surface water and other natural features. Mitigation included in the plan should include the following measures:

- Implement project-specific temporary ESC measures prior to starting work (e.g., silt fence and/or sediment logs).
- Keep additional ESC materials available on site to provide a contingency supply in the event of an emergency.
- Monitor and maintain erosion and sediment controls, as required. Controls are to be removed only after the soils of the construction area have stabilized and vegetation cover has re-established.
- Stabilize materials requiring stockpiling (fill, topsoil, etc.) and keep a safe distance (> 30 m) from watercourses.

9.1.4 PROTECTION OF MIGRATORY BIRDS

To avoid contravention of the *Migratory Birds Convention Act, 1994* (MBCA), avoidance and mitigation measures must be implemented to prevent the disturbance, destruction or taking of a nest, egg, or nest shelter of a migratory bird. Disturbance to nests of protected bird species should be performed outside of the primary nesting period (April 1 - August 31) unless an avian biologist is retained to conduct nest sweeps of the project location a maximum of five (5) days prior to works.

Under the new updates to the MBR, Pileated Woodpecker (Dryocopus pileatus) nests are now protected year-round (Migratory Birds Regulations, 2022). If a Pileated Woodpecker nest is determined to be empty of live birds or viable eggs, then the nest must be registered under ECCC's Abandoned Nest Registry. At which point the prescribed period of inactivity can begin to be counted (36-months) before any action can be taken towards the nest. Destroying an unoccupied Pileated Woodpecker nesting cavity prior to the 36-month waiting period will require a permit and may require mitigation measures be applied.

9.1.5 WILDLIFE PROTECTION

Site-specific wildlife protection mitigation measures will be recommended following completion of site-specific natural heritage investigations in detailed design. The following general measures are recommended:

- A visual search of the work area will be conducted before work commences each day, particularly for the period when most wildlife is active (generally April 1 to October 31). Visual inspections will locate and avoid snakes, turtles, and other ground dwelling wildlife such as small mammals. Visual searches will include inspection of machinery and equipment left in the work area overnight prior to starting equipment.
- If wildlife is encountered, work at that location will stop, and the animal(s) will be permitted reasonable time to leave the work area on their own.
- Contractors should be made aware of timing windows, as appropriate to the species on the site.
- ESC measures should be installed along the limits of work zones to reduce the potential for wildlife, such as turtles or snakes, to enter the construction areas.
- Avoid the use of plastic mesh for wildlife fencing to avoid the risk of entanglement of snakes or other wildlife.
- Any observations of SAR should be reported to MECP and MNRF within 48 hours. SAR should not be handled, harassed, or moved in any way, unless they are in immediate danger.

9.1.6 PROTECTION OF FISH AND FISH HABITAT

Potential impacts to aquatic habitat during construction will be mitigated through site control measures, such as previously mentioned ESC measures, and measures to prevent the entry of substances and debris into the water.

Two unnamed creeks are present near the BPS Areas:

- Unnamed creek crossing on Bruce Road 23 to the north of Concession Road 5 (Area 3),
- Unnamed Creek near Stoney Island Crescent (Area 4, Area 5, and Area 6).

Site plan drawings from the creation of the subdivision and SWM pond indicate that the unnamed creek at Stoney Island Crescent is enclosed in a pipe within the subject property. No impacts are anticipated to this pipe or pond as part of the proposed work. The extension of the watermain north from the Alma Street/Albert Road intersection crosses Little Sauble River and its branches in three locations. No records of aquatic SAR are present in proposed work areas.

Trenchless construction methods are recommended for watercourse crossings to avoid the need for in-water work where fish may be present, such as Little Sauble Creek which is within the 1.1 km watermain extension route. If in-water work is required,

consultation with DFO and MECP will be required during detailed design due to the presence of SAR and associated habitat.

9.1.7 DRAINAGE

Local drainage features must be considered for any selected BPS site when designing the site grading, including consideration for existing overland flow routes and outlets.

- Areas 1, 2, 4, and much of Area 3 are far from the SWM pond or separated from the watercourse and impacts to existing drainage can be avoided to the extent possible through site placement away from drainage ditches and site erosion and sediment controls.
- Area 5 is constrained by Bruce Road 23 drainage ditches, and further investigation may be required to avoid impacting the storage capacity of those ditches.
- If Area 6 is pursued as a BPS, the location on site should not occur within the SWM pond. No impacts to the SWM footprint are anticipated based on the conceptual design from PIC 2.

Drainage plans will be developed during Detailed Design and will be shared with SVCA as part of the permitting process under Ontario Regulation 169/06 of the *Conservation Authorities Act* (CAA). The need for a Permit to Take Water (PTTW) or an Environmental Activity Sector Registry (EASR) submission may be required through MECP if any dewatering is necessary in construction areas.

Previous flooding events have occurred at the existing SWM pond (Area 6) associated with periods of high rainfall events. The existing SWM pond has vegetation build-up within the wet area of the pond, and a vegetation and sediment cleanout is recommended if Area 6 is pursued as a BPS. This should be conducted by the Municipality separate from the EA process as part of routine maintenance for similar structures.

9.2 Cultural Environment

9.2.1 ARCHAEOLOGICAL RESOURCES

As documented in **Section 4.4.2**, portions of the study area retain potential for archaeology resources.

- Site B Stoney Island Crescent alternatives:
    - SWM Block: Partially disturbed, no further archaeological assessment was recommended in those areas. Stage 2 archaeological assessment recommended for remainder of the property.

  - Area 4 (Pumphouse): Previously disturbed, no further archaeological assessment recommended.
  - Bruce Road 23 (Portions of Area 5 and 3 north of Stoney Island Crescent): Majority of the study area identified as previously assessed with no further archaeological assessment recommended or previously disturbed and no further archaeological assessment recommended. A portion of the study area retains archaeological potential and Stage 2 archaeological assessment recommended.

- Albert Rd-Con Rd 2 Extension: A portion of the Albert Road right-of-way retains archaeological potential and Stage 2 archaeological assessment recommended. The remainder of the study area is previously disturbed, no further archaeological assessment recommended.

Should work be undertaken in the areas with remaining archaeological potential, a Stage 2 archaeological assessment (pedestrian survey and/or testpits) will be required in advance of construction to determine whether archaeological materials may be present.

The Stage 1 report completed under Project Information Form (PIF) P422-0040-2023 will be submitted to the Ministry of Citizenship and Multiculturalism in accordance with its review requirements. The Stage 1 Archaeology Assessment report is included in **Appendix E3**.

Areas south of Stoney Island Crescent (Areas 1, 2, and portions of Area 3) were not subject to a Stage 1 Archaeological Assessment as they were added after the field visit in July 2023. If any of those areas are selected for a BPS, an additional Stage 1 Archaeological Assessment shall be conducted for the preferred site to determine if any further archaeological assessment is required.

Consultation and engagement will continue with interested Indigenous communities during Detailed Design if interests are expressed regarding the project and any future archaeological assessment.

Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48(1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with Section 48(1) of the *Ontario Heritage Act*.

The *Funeral, Burial and Cremation Services Act, 2002, S.O. 2002, c.33,* requires that any person discovering or having knowledge of a burial site shall immediately notify the

police or coroner. It is recommended that the Registrar of Cemeteries at the Ministry of Government and Consumer Services is also immediately notified.

Archaeological sites recommended for further archaeological fieldwork or protection remain subject to Section 48 (1) of the *Ontario Heritage Act* (and may not be altered, or have artifacts removed from them, except by a person holding an archaeological license.

9.2.2 BUILT HERITAGE RESOURCES AND CULTURAL HERITAGE LANDSCAPES

The *Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes: A Checklist for the Non-Specialist* (the MCM Checklist) was used to consider potential to encounter these resources in work areas within the study area. Much of the study area will be unaffected by the project, as the Kincardine WTP improvements are within the existing facility, while the existing watermain will remain in place. Work areas are therefore focused on the proposed BPS site near Stoney Island Crescent and the 1.1 m watermain extension.

Consultation with MCM and the Ontario Heritage Trust (OHT) did not identify any potential heritage resources within the study area. No heritage properties were identified in the Municipal heritage registry.

Background mapping identified two properties with structures on them within the 1946 topographic maps. One of these structures appears to be in the same location as the structure depicted on the 1880 historical mapping and the parcel's civic address is 363 Bruce Road 23. The second property has the civic address 11 Stoney Island Crescent. A public comment received for the project identifies this residence as a "century home". Due to a lack of additional available historical mapping material and the residence's distance from the road and tree cover, an approximate age range for its construction could not be determined. The Study Area for the proposed watermain extension includes three residences which are no longer extant. Inverhuron Provincial Park, though not labeled as such, is depicted as a wooded area with a trail system.

In relation to BPS site locations, two properties (363 Bruce Road 23 and 11 Stoney Island Crescent) may meet one criteria of the MCM Checklist as they appear to contain structures that are 40 or more years old. The Inverhuron Provincial Park is located within the 50 m buffer around the proposed watermain extension Study Area and may meet one criteria of the Checklist as a potential cultural heritage landscape.

Based on the current understanding of Project details, no direct or indirect impacts are anticipated for these potential resources as summarized below:

- The nearest structure at 363 Bruce Road 23 would appear to be greater than 50 m from any of the proposed BPS site locations, the closest potentially being

related to Area 3 should the BPS site be located across Bruce Road 23. However a site within 50 m of the property is unlikely given the presence of a gravel pit. Areas 4 and 5 are beyond 50 m of this location and no further work would be required.

- The residence at 11 Stoney Island Crescent is less than 50 m from the property parcel for Area 6 (existing SWM block), but greater than 50 m for all other potential BPS site locations. In relation to Area 6, the potential location of the facility north of the pond footprint would place it more than 50 m from the residence. Therefore, no vibration monitoring is recommended at this time. Areas 4 and 5 are beyond 50 m of this location and no further work would be required.
- A portion of Inverhuron Provincial Park falls within the 50 m buffer around the proposed watermain extension. Available desktop mapping did not identify any structures or potential cultural heritage landscapes located within this section of the park. Given that work is anticipated to occur within the existing municipal right of way, no direct or indirect impacts to Inverhuron Provincial Park are anticipated.

No additional studies are required at this time for the areas identified above and results of the existing conditions and heritage screening were documented in the Cultural Heritage Memorandum, available in **Appendix E2.**

It is recommended that if the Area 6 SWM pond is selected instead of the other locations, the distance between the residence and proposed construction activities should be confirmed during detailed design. The BPS and all associated construction activities shall be more than 50 metres from the residence at 11 Stoney Island Crescent to mitigate the need for additional investigations, and the potential heritage resource should be depicted on construction mapping, with a 50 m buffer for the residence to be demarcated using temporary fencing, staking, flagging or another similar method prior to and during construction.

Should the proposed BPS site involve the other identified parcels in Area 3 in closer proximity (within 50 m) of 363 Bruce Road 23, 11 Stoney Island Crescent, or outside of the municipal ROW adjacent to the proposed watermain extension, a Heritage Consultant with membership in the Canadian Association of Heritage Professionals should be retained to review the proposed change. Likewise, areas south of Stoney Island Crescent (Areas 1, 2, and portions of Area 3 near the gravel pit) were not subject to the cultural heritage memorandum and it is unclear at the time of this report if they will be considered further. If any of those areas are selected for a BPS, an MCM checklist should be conducted for the preferred site to determine if any further cultural heritage evaluation is required.

The MCM checklist an accompanying memorandum were completed and they are included in **Appendix E2**.

9.3 Socio-Economic Environment

9.3.1 PROPERTY

Property acquisition is not required to implement the proposed BPS location at the SWM pond site (Area 6) as it is on municipal property. Any other BPS area (Areas 1-5) may require property acquisition to accommodate the conceptual BPS size and access to a nearby road. Construction access needs or easements will be determined in Detailed Design.

9.3.2 NOISE

The contractor will be required to abide by the municipal noise control by-laws and ensure that all construction equipment is kept in good working order to limit additional noise. The contractor shall also ensure that the idling of construction equipment is kept to a minimum. Additional noise control measures will be addressed during detailed design and included in the construction contract.

9.3.3 AIR QUALITY

During construction, best management practices will be applied to mitigate any air quality impacts caused by construction dust (non-chloride dust suppressants).

9.3.4 CLIMATE CHANGE

The MECP's guide, *Consideration of Climate Change in the Environmental Assessment Process*, outlines two approaches for consideration and addressing climate change in project planning including:

- Reducing a project's impact on climate change (climate change mitigation).
- Increasing the project and local ecosystem's resilience to climate change (climate change adaptation).

The proposed project provides the opportunity to decommission one existing WTP at the Bruce Power site and combine water systems to make more efficient use of water delivery operations in Kincardine. The use of the existing watermain for much of the interconnection with only a short extension makes efficient use of existing resources. Process upgrades at the Bruce Power site also improve the treatment options for Kincardine residents and reduces the need for additional storage in the near term.

10 Approvals and Permits

Permit requirements will be confirmed during Detailed Design. A summary of permits and approvals required for the project is provided below:

Conservation Authorities Act (SVCA)

Under Ontario Regulation 169/06 of the *Conservation Authorities Act* (CAA), a permit is anticipated for development or interference with wetlands and alterations to shorelines and watercourses from the SVCA. Development and site alternation within 30 m of a non-PSW or development within 120 m from a PSW is anticipated to require a permit under the CAA.

An Environmental Impact Study (EIS) to assess hydrologic impact may be required, as described in the Natural Environment report. Exceptions in accordance with Policy 3.7.2.3-2 may allow for public infrastructure (including but not limited to roads, sewers, flood, and erosion control works, and various utility pipelines) within a wetland only where the activity is being established under an approved Environmental Assessment or it has been demonstrated to the satisfaction of SVCA that the control of flooding, erosion, pollution or the conservation of land will not be negatively affected and the interference on the natural features and hydrologic and ecological functions of the wetland has been deemed to be acceptable by the SVCA.

The Municipality should facilitate further consultation with SVCA regarding design plans, and the follow up and coordination of regulatory permit submissions for the necessary permit(s) during Detailed Design.

Endangered Species Act, 2007 (MECP)

Should Detailed Design result in potential impacts to provincially regulated SAR or their habitats, consultation with MECP is recommended to confirm authorization requirements under the ESA.

The provincial *Endangered Species Act, 2007* (ESA) prohibits the killing, harming, harassing, capturing, or taking of a living member of a species listed as Threatened, Endangered or Extirpated by the SAR in Ontario (SARO) list (O. Reg 230/08) (S.9), or the damage to habitat of similarly designated species (S.10). An exception is where a permit is issued under S.17(2) of the same Act or the Activity is registered under Ontario Regulation 242/08 of the ESA.

Although not anticipated to be required, MECP shall be consulted if in-water work is required in Lake Huron to determine authorization requirements for provincially regulated aquatic SAR *(Shortnose Cisco*).

Fish and Wildlife Conservation Act, 1997 (FWCA)

MNRF manages Ontario's natural resources and wildlife on behalf of Ontarians. The ministry administers the *Fish and Wildlife Conservation Act*, 1997 (FWCA) and supporting regulations. In part, the FWCA regulates the relocation of fish and wildlife.

Accordingly, should your project require:

- The relocation of fish outside of the work area, a Licence to Collect Fish for Scientific Purposes will be required.
- The relocation of wildlife outside of the work area (including amphibians, reptiles, and small mammals), a Wildlife Collector's Authorization will be required.

Licences are issued to the individuals that will be conducting the work and expire on the expiry date provided on each FWCA authorization. Additionally, should the removal of a raptor nest be necessary for the project, a FWCA permit will be required.

Public Lands Act

The MNRF oversees the administration of Crown land, otherwise known as public lands in Ontario. Public land includes the beds of most lakes and rivers. Some activities on shore lands (both public and private) are also regulated by the MNRF.

No work is required on Crown land for this project, and therefore no Crown Land Work Permit will be required.

Fisheries Act (DFO)

In-water work is not anticipated for the project. If plans are revised during Detailed Design and the need for in-water work is identified, design details and construction methods are recommended to be submitted to DFO through a Request for Review form for review of the Project under the *Fisheries Act*.

Species at Risk Act

If the need for in-water work is identified, further aquatic investigations may be required, including screening for SAR. Although not anticipated for this project, a DFO Request for Review may be required for alterations to watercourses.

As previously noted, further natural environment investigations are recommended during the Detailed Design phase prior to construction, including a significant wildlife habitat assessment and SAR search for impacted areas to consider whether SAR and/or SAR habitat may be present.

Municipality of Kincardine

As per the Official Plan Policy D7.6, an EIS is required which identifies potential impacts, mitigation, and compensation for infrastructure projects, such as construction or upgrading of a trunk watermain. It is the policy of the Municipality to involve the SVVA and Bruce County staff whenever an EIS is required and that; the SVCA and County staff shall be pre-consulted to discuss the Terms of Reference for the EIS, prior to undertaking the study. The EIS would identify potential impacts, mitigation and compensation for the infrastructure project.

Additionally, Schedules A-1 to A-4 of the *Kincardine Official Plan* (2021) identify specific lands north of Northline Extension Road and west of Bruce Road 23, wherein development and site alteration, including filling and/or grading within some portions of the Natural Environment designation may require a permit from SVCA prior to carrying out the work in accordance with Ontario Regulation 169/06.

Natural environment investigations should be completed to ensure compliance with Municipality of Kincardine and SVCA requirements when working near natural areas such as woodlands.

Ministry of the Environment, Conservation and Parks

Based on the anticipated scope of work, the following permits and approvals from the MECP are anticipated:

- MECP Drinking Water Works Permit (DWWP) Amendment to include changes associated with the Kincardine WTP upgrades and new BPS.
- MECP Form 1 related to the watermain extension.
- MECP Consolidated Linear Infrastructure Environmental Compliance Approval for any storm and sanitary infrastructure (subject to final design for the BPS).
- A Permit to Take Water (PTTW) for construction dewatering in excess of 400,000 L/day, and an Environmental Activity and Sector Registry (EASR) for construction dewatering between 50,000 and 400,000 L/day, if required.

11 Commitments for Detailed Design and Further Work

Table 21: Commitments to Carry-Forward to Detailed Design

Category	Mitigation
Traffic, Noise, Air Quality	• Reduce or avoid construction-related impacts through standard mitigation, such as maintaining access to properties, adhering to noise by-laws, and reducing dust
Drainage	• Municipality to consider further maintenance at the SWM Pond to reduce potential for future flooding if selected as a site • Any site chosen for a BPS shall consider local drainage and comply with SVCA permits or approvals
Wildlife and Fish Habitat	• Avoid vegetation removal during typical bird nesting seasons (i.e., April 1 to August 31) • Conduct future site-specific terrestrial and fish habitat investigations in areas impacted to avoid wildlife impacts, including for SAR or SOCC if present • Avoid in-water work to the extent possible, and/or utilize trenchless methods for water crossings • Where required, in-water work may be subject to a DFO request for review • Consult with the MECP if SAR may be present
Archaeology and Heritage	• Stage 1 assessment was conducted for this EA. Complete any further archaeological investigations (Stage 2-4) based on recommendations. • If a BPS is selected at Area 1, 2, or portions of Area 3 south of Stoney Island Crescent, a further Stage 1 Archaeological Assessment and MCM checklist shall be

Category	Mitigation
	undertaken to determine additional heritage or archaeology studies required. • Avoid work within 50 m of buildings on 363 Bruce Road 23 and 11 Stoney Island Crescent. No work is anticipated within this 50 m buffer around the structures.
Permits and Approvals	• SVCA: Work in or near watercourses/regulated areas • Determine need for dewatering requirements during detailed design • Adhere to SVCA and MECP sourcewater protection policies • Obtain SAR permits if required

12 EA Documentation Filing

This Environmental Study Report (ESR) fulfills the documentation requirements for the Schedule C Class EA planning process. The Class EA study process has involved consultation with directly affected members of the public, Indigenous communities, stakeholders, and review agencies to ensure that they were aware of the project and that their concerns have been addressed.

The filing of this report represents the conclusion of Phases 1 through 4 of the Class EA planning process. Provided that no Section 16 Order requests are received, the Municipality may proceed with the Detailed Design and implementation (Phase 5) 30 days following the completion of the public review period.

The ESR will be available for review online, on the Municipality of Kincardine Website: https://www.kincardine.ca/Water-and-Sewer/.

APPENDIX

Appendix A Notification Materials

Appendix B Public Information Centre Displays

Appendix C Correspondence

Appendix D Official Plan and Sourcewater Protection Mapping

Appendix E Environmental Technical Reports

E.1 Natural Environment Report

E.2 Checklist and Cultural Heritage Memorandum

E.3 Stage 1 Archaeology Assessment

Appendix F Technical Memos

F.1 Technical Memorandum 1 - Expansion of the Kincardine Water Supply System Evaluation for Comment

F.2 Technical Memorandum 2 - Kincardine Water System Hydraulic Model

F.3 Technical Memorandum 3 - Proposed New Booster Pump Station - Design Alternative Review